Railway Age Gazette

PUBLISHED EVERY FRIDAY AND DAILY EIGHT TIMES IN JUNE, BY THE
SIMMONS-BOARDMAN PUBLISHING COMPANY,
WOOLWORTH BUILDING, NEW YORK.

CHICAGO: Transportation Bldg. CLEVELAND: Citizens' Bldg.
LONDON: Queen Anne's Chambers, Westminster.

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Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free:

United States and Mexico.....$5.00
Canada 6.00
Foreign Countries (excepting daily editions)..... 8.00
Single Copies .....15 cents each

Engineering and Maintenance of Way Edition and four Maintenance of Way Convention Daily issues, North America, $1.00; foreign, $2.00.

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

WE GUARANTEE, that of this issue 8,000 copies were printed; that of those 8,000 copies, 6,560 were mailed to regular paid subscribers and 345 were provided for counter and news companies' sales; that the total copies printed this year to date were 182,159—an average of 8,674 copies a week.

VOLUME 54. MAY 23, 1913. NUMBER 21.

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THE reports of the committee on stokers of the Master Mechanics' Association have in the past been confined largely to descriptions of the machines and the results of the experimental working of a few locomotives equipped with them. Within the past year the status of the locomotive stoker has changed so rapidly that it can now fairly be said that the device has advanced beyond the experimental stage. There are over 300 large locomotives in regular service, mostly of the mikado and Mallet types, equipped with mechanical stokers, and as many more on order are being so equipped, a fact which in itself indicates that those railroads which are now using stokers have found sufficient merit in them to warrant their co-operation with the manufacturers in eliminating defects and developing the machine to a thoroughly practical basis. While the claims of the firemen, that the work of firing the larger classes of locomotives is becoming beyond physical endurance, are not conceded by the railroads, the point remains one of contention, and the perfecting of the mechanical stoker, which will relieve the fireman from practically all physical exertion, should tend to greatly simplify future controversies with this class of labor. The committee on stokers of the Master Mechanics' Association this year has for its chairman the assistant superintendent of motive power of the Norfolk & Western, a road which is operating a number of Mallet locomotives equipped with stokers, and with the development that has taken place in these machines during the past year, it is probable that a report of more than ordinary interest from the operating standpoint will be presented at the June convention.

ONE of the conditions in which it is impracticable to protect a train by flag is that where the roadbed does not afford safe footing for the flagman. A case of this kind is reported, on another page, in Mr. Belnap's account of a collision at Gothenburg, Neb.—a long bridge exposed to a furious wind. Wind might possibly be provided against by stout railings, but that is not the only danger encountered at bridges. Ice and sleet make trouble of this kind at innumerable places every winter; not usually so positive and pronounced a danger as a blizzard, but still a serious obstacle to the uniform enforcement of the flagging rule. Such adverse conditions ought to be more carefully taken into account when estimating the value of flag protection. Uniformity is held to be a cardinal virtue in the framing of rules and in their enforcement; to secure it in the matter of flagging requires that many diverse conditions be taken into consideration. The single element of low temperature in northern climates may become a danger; and with a blizzard it may make the flagman's task absolutely dangerous to himself. A temperature of 40 degrees below zero may become dangerous to trains even before the flagman suffers any peril of life or limb, because of the temptation to neglect which assails a man when he is in distress. The increase in danger due to cold and snow has been recognized by some managers by the promulgation of a rule that snowplows should be protected by the space interval even when the space-interval system was not regularly employed. It is a plain lesson of experience that there are circumstances where the space interval is the only system that is both safe and reasonable. The automatic block system cannot be operated on single track without a provision for communicating ahead when a train is held by a false-stop indication; and, therefore, to deal with such situations as that at North Platte the rational provision is a manual space-interval system in reserve; telegraph or telephonic communication between stations which are open (or between conductors by means of roadside telephones). With this, the deficiency of the automatic system is made up for by a substitute which can be called even better than the system supplanted; while dependence on the flagman is admittedly an unscientific expedient.

A "STUDY of Railway Growth and Railway Earnings of the Railways of the United States for the Decade 1901-1910" has been compiled by E. E. Williamson, transportation expert and statistician for the Trade and Transportation Bureau. Apparently the object of this compilation is suggested by the note to Table H, which says: "The increase, 1910 over 1901, of 158.9 per cent. in the amount paid in dividends on capital stock, and 42.6 per cent. in the average rate paid on dividend-paying stock, indicates that the return upon the capital stock, 1910 over 1901, more than kept pace with the percentage increase, 1910 over 1901, of the various units in tables A to G (tables based on units of service, equipment and capitalization"). The other night at the Economic Club dinner in New York, B. F. Bush, speaking immediately after A. B. Garretson, expressed surprise at the figures for dividend increases quoted by Mr. Garretson and was apparently unfamiliar with their source. It is probable that Mr.

Garretson got his figures from the same source as that used by Mr. Williamson, namely, the annual statistical report issued by the Interstate Commerce Commission, the last complete available one being for the year 1910. In quoting the figures which he did Mr. Garretson specifically called attention to the fact that these were the figures that were used by the unanalytical railroad employee. Our transportation expert and statistician is apparently willing to take his figures with no more analysis than Mr. Garretson gives the ordinary brakeman credit for. The Trade and Transportation Bureau figures show $405,771,416 paid in dividends; but of this amount the Interstate Commerce Commission's report shows that $293,836,863 only was dividends paid to the public, the remainder being dividends paid to other railway companies and so forming part of the funds on which they drew to pay dividends. In 1901 the dividends paid to the public amounted to $131,627,672. The percentage of increase is a little over 123 per cent., as against 159 per cent. shown by the Trade and Transportation Bureau exhibit. Whereas the average rate paid on *dividend paying* stocks was 7.50 in 1910 and 5.26 in 1901, the average rate paid on all stock *in the hands of the public* in 1910 was 5.29 per cent. and in 1901 a little over 3.20 per cent. We find, therefore, if we analyze the Interstate Commerce Commission's returns and try to get at what railroad capital is actually receiving on its investment that the rate of increase in per cent. paid in 1910 over 1901 is higher than is shown by the Williamson compilation; but it is pertinent in this relation to call attention to the fact that the rate of increase of dividends paid on a stock, which pays nothing in 1901 and pays 1 per cent. in 1910, is *infinity*. The fact of the matter is that a return of less than 3½ per cent. on railroad stock in the hands of the public in 1901 is a concrete measure of how inadequately the hopes of the investor in railroad securities of that period had been realized, and the fact that during these nine years his hopes have only been realized to the extent of less than 5½ per cent. paid on railroad stocks is certainly not an argument of any very great effectiveness against a demand on the part of investors for making railroad securities somewhat more attractive.

SOME DISPUTED POINTS IN RAILWAY VALUATION.

2.—Investment from Earnings.

IT has been the policy of the railway companies of the United States to invest large amounts of their earnings in permanent improvements in their properties. The earnings thus invested usually have been surplus earnings over what were required to pay operating expenses and interest on indebtedness, and in many cases they have been surplus after the payment of operating expenses, interest on indebtedness and larger or smaller dividends on part or all of the outstanding stock. In some instances where this practice has been followed the outstanding capitalization has represented only investment of funds raised by the sale of securities. In other cases part of it has consisted of securities issued for nominal or no consideration. Whether the total capitalization has represented investment actually made by the security holders, or part of it has represented such investment and part of it has not, there have been some cases where investment from earnings has been made before the owners of the securities have received a "fair return" on their actual investment, and other cases where it has been made after they have received such a "fair return." The total amount of these surplus earnings invested in the railways of the United States up to June 30, 1909, as carried on their books, was stated by Commissioner Lane in the opinion in the Western rate advance case to be $800,642,923.

It is clear that if railway valuation were based entirely on cost of reproduction this entire investment would have to be included. In the various state valuations based on the cost of reproduction it has been included, but the valuation law under which the Interstate Commerce Commission will act provides that it shall ascertain more than the cost of reproduction. It must "ascertain and report in detail as to each property owned or used by said common carrier for its purposes as a common carrier, the original cost to date, the cost of reproduction new, the cost of reproduction less depreciation, and an analysis of the methods by which these several costs are obtained and the reason for their differences, if any." The commission is also to ascertain and report separately other elements of value. After having ascertained all the elements the commission is both to include them in its report and to base its own estimate of the value of the different railways on them. If the railways disagree with the commission's conclusions they can appeal from it to the courts. It is evident, therefore, that all investments from earnings must be ascertained and reported, but the weight to be given to them is yet to be determined.

One view advanced by some lawyers and economists is that the owners of a railway or other public utility are entitled to have included in its valuation and to receive a return on only the actual investment from their own capital made by them, and that invested surplus earnings over and above interest on bonds and reasonable dividends on stock are not really investment by the owners. Commissioner Lane expressed this thought in the Western rate advance case, when he said, "Perhaps the nearest approximation to the fair standard is that of bona fide investment—the sacrifice made by the owners of the property considering as part of the investment any shortage of return that there may be in the early years of the enterprise." In other words, if a road is capitalized for $50,000 a mile, of which $25,000 is bonds representing actual investment and bearing interest at 4 per cent., and $25,000 is stock, also representing actual investment, on which dividends averaging 6 or 8 per cent. have been paid, and if, in addition, $15,000 per mile has been invested from earnings, the owners of the railway are not entitled to have this $15,000 included in the valuation. On the other hand, if the railway is capitalized as stated, and the bondholders have always received their interest, but the stockholders have received only 3 or 4 per cent. on their part of the investment and have allowed 3 or 4 per cent. to be invested in the properties, then the investment from earnings should be included in the valuation. This theory was strenuously insisted on by the attorneys for some of the western inter-mountain communities in the Pacific coast rate cases.

It is contended, on the other hand, by other lawyers and economists, that all investments from earnings should be included in a valuation. It is urged, in the first place, that when practically all of the railway mileage of the United States was built and the permanent improvements in it were made there was nothing in the charters of the railways, in the constitutional or statutory provisions applying to them, or in the law of public service callings as laid down by the courts, to indicate that investments made by railway companies from earnings would be treated differently from investments made from any other source. Therefore, those who built the railways built them on the assumption that, like investors in other concerns, they would be allowed to profit by their investments from earnings. The railway corporations of the United States could have followed the practice of those of England and paid out to their security holders annually all of their net earnings. There was nothing in the law, and there is nothing in the law now, to prevent this. Therefore, it is argued, to refuse to include in the valuation the investment from surplus earnings would be to break the public faith with the owners of railways and to confiscate part of the value belonging to them by what would be, in effect, retroactive legislation. Furthermore, it is argued, the application of this principle would lead to some absurd results. Reverting to the example already used, on this principle a railway, the original cost of which was $50,000 a mile, and which had earned the annual interest on its bonds, 6 per cent. on its stock and enough to invest $25,000 a mile from surplus earnings, making the total invested in it $75,000 a mile, would be valued at $50,000 a mile. A railway, which also originally cost $50,000 a mile, which had been in operation 10 years, and which during this period had paid 4 per cent. interest on its bonds and earned only 6 per cent. on its stock, of which one-half had been invested in the property, would at the end of the period represent

an original investment per mile of $50,000 and an investment from earnings of $3,750, or $53,750 per mile. Obviously, the former railway, which had cost $75,000 a mile and was the better earner would be the more valuable, and yet on this principle, while a valuation of only $50,000 per mile would be put on it, a valuation of $53,750 a mile would be placed on the road which both had cost less and earned less. The valuations having been made on this principle, the question naturally arises, as to the valuation on which railway rates would be adjusted.

The foregoing summarizes the news on both sides of this very important question. How important it is, is indicated by the figure regarding the total investment from the surplus given by Commissioner Lane.

PROPOSED GOVERNMENT OWNERSHIP IN ALASKA.

IN extremely few countries has the adoption of government ownership of railways been preceded by full and intelligent discussion of the relative advantages of state and private management. There was pretty full discussion in Germany and Switzerland, and the decision was for state ownership. In Italy there was made the most exhaustive investigation in history, and the decision was against government management, but because of complicated financial relations between the government and the railway companies, state management came, anyway. With these exceptions, state ownership and management usually has resulted from fortuitous and temporary conditions or snap judgment. A beginning is being made with state ownership in the United States in the same way. The federal government acquired the Panama Railroad, not because it was decided that state ownership was preferable on principle—that point was not discussed—but because this road was to be used as an instrumentality in the construction of the Panama canal. Now government ownership in Alaska seems likely to be adopted without any consideration of the principle involved. To adopt the policy in disregard of the principle involved is to adopt it in disregard of the probable results.

On August 23, 1912, Congress passed a bill to create a commission to investigate the transportation question in Alaska and report "in respect to the best and most available routes for railroads in Alaska which will develop the country and the resources thereof for the use of the people of the United States." Within a week President Taft appointed a commission composed of Major Jay J. Morrow, Corps of Engineers, United States Army, chairman; Alfred H. Brooks, geologist in charge of division of Alaskan Mineral Resources, Geological Survey, vice-chairman; Leonard M. Cox, civil engineer United States Navy, and Colin M. Ingersoll, consulting railroad engineer. The three largest states in the Union are Texas, California and Montana. The area of Alaska is 20,000 square miles greater than the combined areas of these three states, and is one-fifth the area of the entire United States. This indicates what an assignment the commission was given. To execute it in a way that would enable it to make a report that would deserve respect would have required many months. Nevertheless, the commission, which included only one engineer of railway experience, made its report to the president on January 30. This was but five months after its appointment, and those five months were fall and winter months, during which the extreme weather in Alaska makes investigation of railway routes in that territory extremely difficult or impossible. Yet not only does the commission undertake to tell the best routes for the construction of railways in Alaska and recommend the building of two lines, but it also essays to estimate in considerable detail what the railways along all the different routes considered would cost to construct, what traffic they could expect, what rates they could make, and what their fixed charges, gross earnings, operating expenses and net earnings would be. And it is proposed on the basis of such an investigation and report that Congress shall embark the government of the United States on a policy of public ownership of railways in Alaska that it is estimated will at the start cost $35,000,000. The very fact that such a proposal can be seriously made and considered is an argument against government railway ownership in this country. Government ownership is a success in Prussia. But can any one imagine the Prussian government doing business in such a way? Can anyone imagine private capitalists giving engineers only five months—most of them winter months—to report on a proposed expenditure of $35,000,000 on railways in a country like Alaska?

The argument is advanced that the natural resources of Alaska should be developed, that a prerequisite to their development is the construction of a large new mileage of railways, and that the government should do this, first, because it can do it at a lower cost of capital, and second, because it is more likely to build an adequate mileage than private companies, because private companies must earn profits while the government need not.

That the natural resources of Alaska ought to be developed and that the construction of new railway mileage is essential for this purpose will not be controverted. The new mileage may be secured in any of three ways. Its construction may be left to private companies without government aid, or the government may build it, or private companies subsidized in one way or another by the government may build it. The three main objects to be sought are, first, that the new construction shall be adequate; second, that the total economic cost of the transportation provided, including operating expenses and return on the capital invested, shall be made as low as practicable; and third, that the rates shall be so made as best to develop the potential and handle the available traffic. The potential and available traffic would be the same for either government or private railways. Under government ownership railways ought to be built in the same places as they would be built by intelligent private capitalists, namely where the potential and available traffic are greatest. A traffic that would pay government railways would pay private railways, provided that the one were to be constructed and operated as economically as the other; and—again with the same proviso—a traffic that would not pay the one would not pay the other. If private railways were built and the government guaranteed their interest the government could by regulation make the rates as low as it could make them on government railways since if there were a deficit the government would make it good from taxation just as it would in the case of railways it owned. If the traffic and the rates applied were the same in either case the gross earnings would be the same; and in that event whether the total earnings would be sufficient to pay operating expenses and a return on capital—and if they were not, whether a larger deficit would have to be made good from public taxation under government or private ownership—would depend entirely on the economy with which the roads were de-developed and operated. The whole question, then, is whether public or private management would be the more economical.

The Alaskan railroad commission concluded that the total amount necessary to pay a return on capital and working expenses would be less under government than under private ownership. This was based on the assumption that the government could borrow money for construction cheaper than private companies unaided by government guarantees of interest. It was tacitly assumed that the cost of construction and operation by the government would be the same as by private companies. But, in the first place, it is not necessarily true that the government could borrow money at a lower rate than private companies. As the commission itself indicated, if the government guaranteed part or all of the interest of private companies as the government of Canada is doing in some cases, the private companies could borrow money as cheaply as the government. And in any event, the question whether construction and operation by the government or private companies would be the cheaper is a more important question than which could borrow capital the cheaper, for on most railways the operating expenses amount to more than the necessary return on investment. In the year ended June 30, 1911, the operating expenses of the railways of the United States were 68.66 per cent., and their net earnings, from which all return on investment was paid, only

31.34 per cent. of their gross earnings. The expenses per mile were $7,867, and the net earnings $3,593. Therefore, a 10 per cent. saving in operating expenses would have amounted to $786.70 per mile, while a 10 per cent. saving in net earnings would have amounted to only $399.30 per mile. In Canada in the fiscal year 1912 operating expenses were 68.7 per cent. of gross earnings and net earnings 31.3 per cent. of gross earnings. These figures show that on most of the existing railways of North America it is more than twice as important to economize in operation as in cost of capital.

Now, statistics of railways throughout the world show that government management is usually less economical than private management. The following table gives the capitalization or cost of construction per mile of state railways in six leading countries and of private railways in six leading countries:

State Railways.	Capitalization or cost of construction.	Private Railways.	Capitalization or cost of construction.
Belgium	$187,787	United Kingdom	$274,562
Italy	124,586	France	148,886
Switzerland	116,692	Spain	77,077
Prussia-Hesse	114,000	United States	62,657
Canada (Intercolonial)	64,095	Argentina	56,161
New South Wales	63,999	Canada	55,829

This table does not indicate that under government ownership railways cost less than under private ownership. The private company that formerly owned the Panama Railroad, which was then a double-track line, had a capitalization of $221,120 per mile, while the reconstruction of the railway as a single-track line by the United States government cost $226,190 per mile. It is especially significant, as Alaska is a new country, that the cost of construction of both the government-owned Intercolonial of Canada and of the state railways of New South Wales has been larger than is the capitalization of the private railways of either the United States, Argentina or Canada.

Data regarding the expenses of operation are even more significant. While the traffic density—passenger and freight—of the private railways in France is 84 per cent. heavier than that of the state railways, their operating expenses per mile are but 5 per cent. greater. While the density of traffic of the railways of Canada as a whole is 83 per cent. as great as that of the government-owned Intercolonial, their operating expenses per mile are only 77 per cent. as great. While the density of traffic of the government-owned but privately operated railways of Holland is 43 per cent. greater than that of the Danish government roads, their operating expenses per mile are only 23 per cent.. greater. While the density of traffic of the Spanish private roads is 70 per cent. as great as that of the Italian government railways, their operating expenses per mile are only 39 per cent. as great. The French private roads have a traffic 68 per cent. heavier than the Swiss state roads, and their operating expenses per mile are only 9 per cent. greater. The traffic of the French private roads is 68 per cent. as heavy as that of the Prussian-Hessian state roads, and their operating expenses per mile are only 60 per cent. as great. The density of traffic of the Argentine private roads is 10 per cent. greater than that of the New South Wales government roads, while their operating expenses per mile are 2.4 per cent. less. The Canadian private roads have a traffic 63½ per cent. heavier than that of the New South Wales government roads and their operating expenses per mile are only 5½ per cent. greater. The railways of the United States as a whole have a traffic density 66 per cent. as great as that of the Prussian-Hessian government roads, and pay wages more than twice as high, and yet their operating expenses per mile are only 52 per cent. as great as those of the Prussian-Hessian government roads. The railways of United States group 2 handle a traffic 143 per cent. more dense than that of the Prussian-Hessian roads and pay wages twice as high, and yet their operating expenses per mile are only 11 per cent. greater than those of the Prussian-Hessian lines. It is a rule almost without exception that under conditions at all comparable the cost of operating government railways is larger in proportion to the traffic that they handle than on private railways.

Further evidence that government operation is almost invariably more expensive than private operation is afforded by the statistics of the railways which in recent years have been transferred from private to government management. The Western Railway of France was taken over by the government in 1908. In four years under government management its traffic increased 12 per cent., while its operating expenses increased 50 per cent. In the last ten years it was under private management the operating ratio of the Panama Railroad never exceeded 66 per cent. Under the management of the United States government it increased in 1905 to 77½ per cent.; in 1906 it was 79.5; in 1908, 74.5 per cent.; in 1911, 70.8 per cent. The increase in earnings between 1904 and 1911 was 84 per cent., and in expenses 110 per cent. The average operating ratio of the Italian railways under private management during the five years ending 1905 was 67½ per cent. Government operation was resumed in 1905, and never since then has the operating ratio been less than 77 per cent., and in 1908 it rose to 83 per cent. In view of all these facts it is rather startling to find a commission assuming without investigation or discussion that government development and operation of railways in Alaska would be as economical as private development and operation.

It may be said that under government management the railway mileage of Alaska would be increased faster than it would be under private management. This is an argument often advanced for government ownership in new countries. But the evidence shows that if a country affords any business for railways to handle they will be more rapidly constructed under private than under public ownership. In no country in the world did railway construction go on so rapidly until within recent years as in the United States. The only continent on which from the beginning the railways have been owned and operated by the government is Australia. There, if anywhere, the evidence that railways will be more rapidly developed in a new country by the government than by private companies should be forthcoming. Argentina and Canada are other new countries, and in them the great majority of the railway development has been left to private companies. The area of Australia is three times as great as that of Argentina and 70 per cent. as great as that of Canada. The following table, giving the railway mileage in Australia, Argentina and Canada in 1880 and 1911, shows where the increases in mileage have been most rapid:

	1880.	1911.	Increases.
Australia	3,580	16,078	12,498
Argentina	1,408	19,843	18,435
Canada	6,874	25,400	18,526

It will be seen that in this period of 31 years the increase in mileage in both Argentina and Canada was 50 per cent. greater than it was in Australia. There has been for years one transcontinental railway across Canada, and soon there will be three. There is one across Argentina in connection with the Chilean railways. Australia, under government ownership, is still waiting for its first transcontinental railway. Furthermore, the statistics given do not do justice to Canada, for in 1911 there were 11,633 miles under construction in Canada, of which 1,560 miles were in operation. When all the mileage now under construction in Australia and in Canada is finished, Canada, with an area less than 50 per cent. greater than that of Australia, will have almost three times as large a mileage of railways.

If past and present experience is any criterion, private companies will provide a larger mileage and construct and operate it more economically than the government wherever the conditions warrant railway development. They will warrant it wherever the available and potential traffic are sufficient to make railways pay. And if the resources of Alaska are not sufficient to make the railways pay, in the long run, why should the people of the United States be taxed to subsidize either government or private construction in Alaska? If, however, the government is to adopt the policy of subsidizing construction the experience of the world indicates that it would secure more results with a given amount of subsidies if it subsidized private companies, as Canada is doing, than if it went into the business of building and owning railways on its own account.

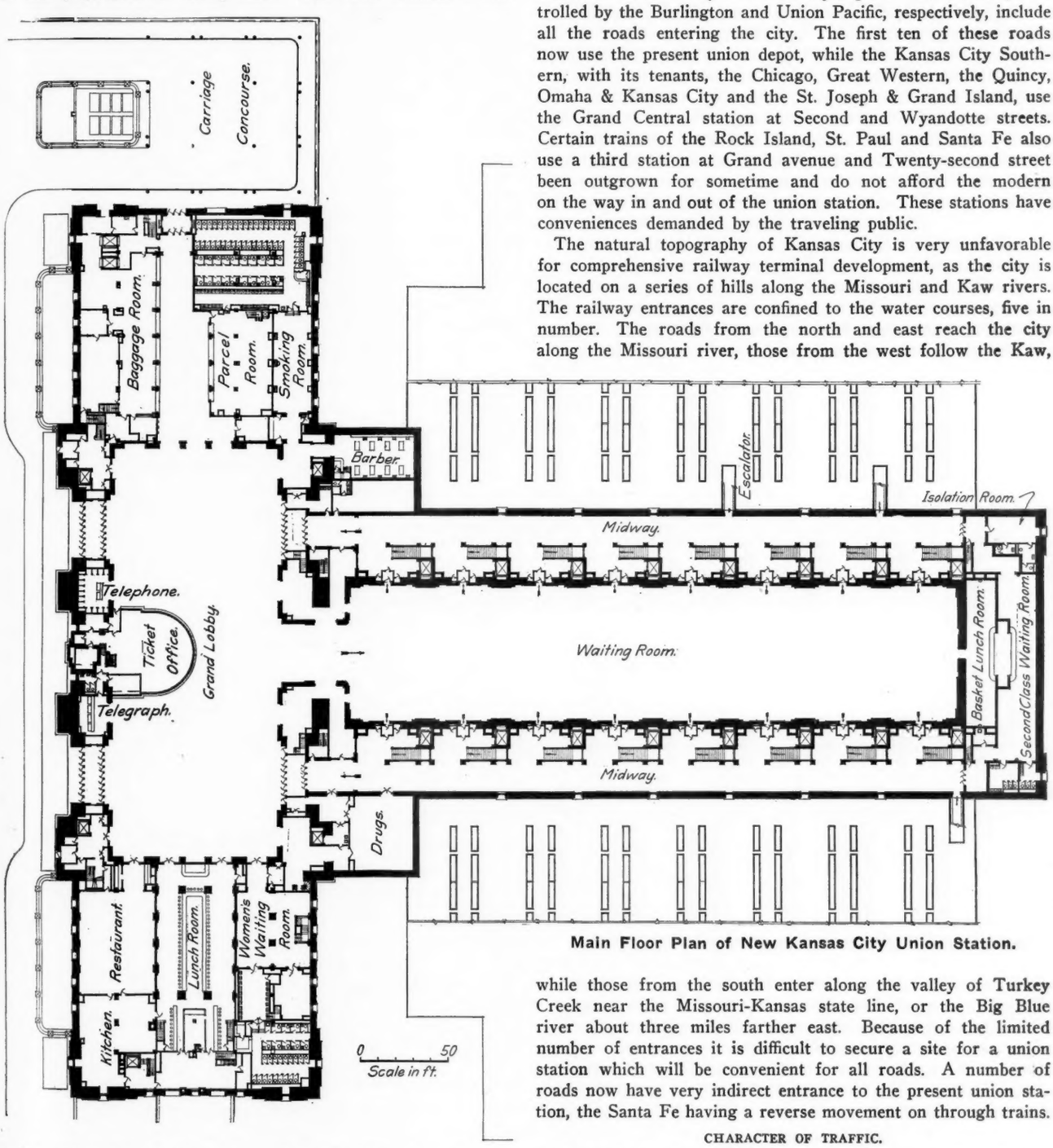
NEW KANSAS CITY, MO., PASSENGER TERMINAL.

Union Depot for All Roads Approaching Completion.
Project Includes Belt Line and Complete Facilities.

The largest railway terminal development now under way, except the Grand Central Terminal in New York, which is now nearing completion, is that of the Kansas City Terminal Railway at Kansas City, Mo., where improvements estimated to cost $40,000,000 are being made. This work includes a new union station for all the roads entering the city, a belt line for passenger and freight traffic connecting with all the roads, new local freight houses, terminal switching yards for freight interchange, etc.

The Kansas City Terminal Railway Company is a corporation chartered for the purpose of providing new terminal facilities. The stock is owned equally by 12 roads, the Santa Fe, Alton, Burlington, Rock Island, St. Paul, Missouri, Kansas & Texas, Missouri Pacific, Frisco, Union Pacific, Wabash, Great Western and Kansas City Southern, which, together with the Quincy, Omaha & Kansas City and the St. Joseph & Grand Island, controlled by the Burlington and Union Pacific, respectively, include all the roads entering the city. The first ten of these roads now use the present union depot, while the Kansas City Southern, with its tenants, the Chicago, Great Western, the Quincy, Omaha & Kansas City and the St. Joseph & Grand Island, use the Grand Central station at Second and Wyandotte streets. Certain trains of the Rock Island, St. Paul and Santa Fe also use a third station at Grand avenue and Twenty-second street been outgrown for sometime and do not afford the modern on the way in and out of the union station. These stations have conveniences demanded by the traveling public.

The natural topography of Kansas City is very unfavorable for comprehensive railway terminal development, as the city is located on a series of hills along the Missouri and Kaw rivers. The railway entrances are confined to the water courses, five in number. The roads from the north and east reach the city along the Missouri river, those from the west follow the Kaw,



Main Floor Plan of New Kansas City Union Station.

while those from the south enter along the valley of Turkey Creek near the Missouri-Kansas state line, or the Big Blue river about three miles farther east. Because of the limited number of entrances it is difficult to secure a site for a union station which will be convenient for all roads. A number of roads now have very indirect entrance to the present union station, the Santa Fe having a reverse movement on through trains.

CHARACTER OF TRAFFIC.

The problem of providing for the passenger traffic at Kansas City is radically different from that at any of the other large stations recently built. While large numbers of suburban passengers are handled at the Pennsylvania and Grand Central terminals at New York, and the North Western station at Chicago, there is practically none of this traffic at Kansas City.

Also while at the other stations there is practically no transfer of passengers to other trains leaving the same station, and nearly all the passengers, both through and suburban leave the building immediately on their arrival at Kansas City, both through, transfer and local Kansas City traffic are handled. The Santa Fe, Rock Island and Missouri Pacific each run a number of trains daily through the city. Numerous other trains on these roads, as well as all trains on the other roads, stop and start here. This gives rise to a large transfer of passengers from one train to another, over 30 per cent. of those handled through the union depot in 1911 being ticketed through, in addition to a large number of others who bought tickets locally to Kansas City and then to their destinations.

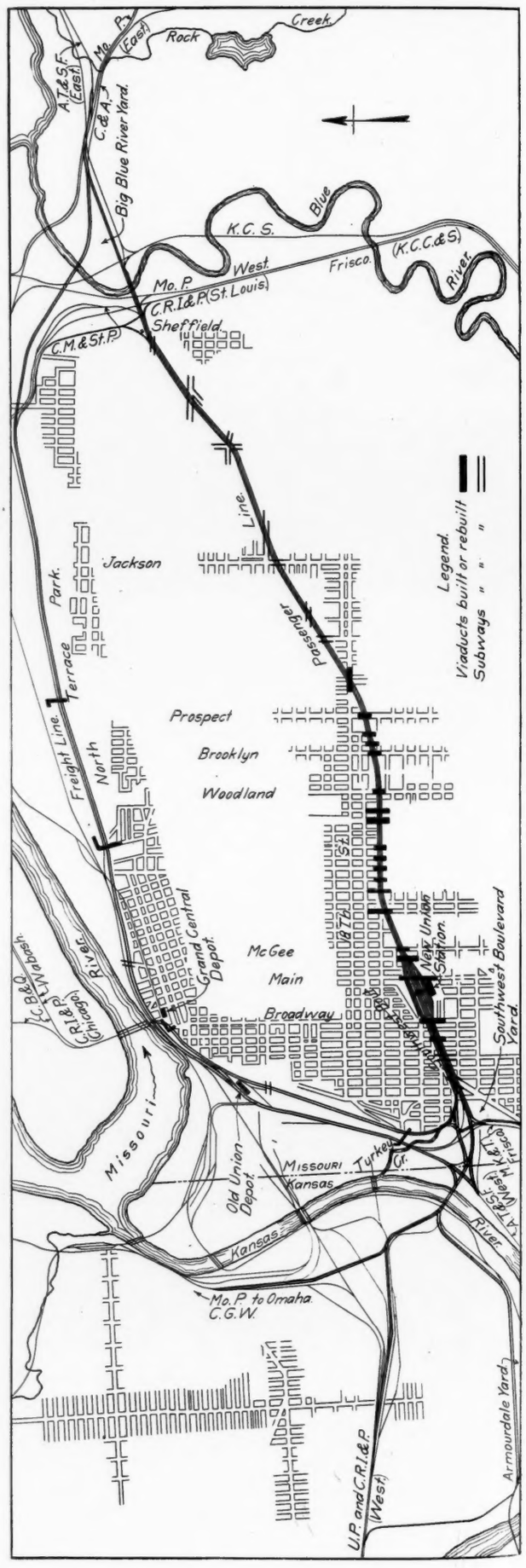
On trains passing through the city, considerable switching is necessary in the station to set in or remove dining cars, connecting line sleepers, etc. This requires a track layout such that a switch engine can work readily with minimum interference with other operations. These distinctly local conditions materially influenced the designs for tracks and buildings to provide for handling the trains promptly and expeditiously and to care for the passengers between trains.

Largely because of the importance of Kansas City as the gateway to the southwest, the number of passengers handled is out of all proportion to the size of the city. In 1911, 78,542 trains with 456,334 cars were handled for the ten roads entering the union depot alone. Over 2,215,000 pieces of baggage were handled in the union depot alone in 1911, and 2,076,084 pieces in 1912. This, combined with that handled at the Grand Central station in Kansas City, makes a total of 2,500,000, equal to that at South station, Boston, the largest in this country. Kansas City has a maximum daily record of 10,000 pieces of baggage as compared with a maximum of 6,000 pieces at the Pennsylvania terminal, New York. The income from storage on baggage at the union depot in 1911, amounted to $20,384, and in 1912 to $19,457, while the parcel room receipts for 1911 were $41,480, and for 1912, $40,564. The ticket sales in 1911 at the union depot ticket office alone, exclusive of Pullman tickets, numbered 1,401,238, amounting to $4,892,438, while in 1912, 1,330,544 tickets were sold amounting to $4,501,781.

The transfer of mail is also very heavy because of the number of diverging routes. The proportion of mail transferred, to that going through without change, is so great that the Santa Fe finds it more expeditious to set out one mail car and pick up another on its through trains and to transfer the mail going through, rather than that to be unloaded. From 225 to 300 tons of mail are handled through this station daily, and as most of this is transferred from one train to another, the terminal company must assume charge of the transfer and bear the expense, which is no small item in itself. The amount of mail handled compares very favorably with that at South station, Boston, where about 250 tons are handled daily, and at the Pennsylvania station in New York, where between 220 and 260 tons are handled.

A careful study of the increase in the traffic passing through the present union station shows that the number of trains has doubled every 13 years, the number of cars every 12 years, and the amount of baggage handled every 11 years. Naturally, this rapid increase in traffic long ago caused the old station to be completely outgrown. Also, the confusion and inconvenience resulting from maintaining two stations has long been recognized, and when plans for the new station were considered, opportunity was offered to combine in one terminal.

Negotiations have been conducted with city officials looking toward a reconstruction of these terminal facilities for several years, and ordinances providing for this work were passed in 1909. These ordinances were ratified by the voters at a special election and the preparation of plans was begun at once. As the details were worked out it became evident to the city and to the Terminal company that certain changes which affected the ordinances in details only rather than the general plan were necessary for the best interest of both parties. Accordingly a



Map of Portion of Kansas City Showing Terminal Railway Tracks.

revised ordinance was prepared and passed by the city council in June, 1911. The most important changes made were regarding grades east and west of the new station. This ordinance provides for the construction of a union passenger station west of the present Grand avenue station, four freight stations where local freight will be received for all roads, a belt line formed by the lease of existing tracks and the construction of additional

The South or Plaza Side of the New Station.

track where necessary, and the complete separation of street and railway grades.

THE PASSENGER STATION.

The most important individual feature of this plan is the passenger station which is being constructed at a cost of about $5,000,000. As shown on the accompanying map, the new station is located between Broadway and Main streets, opposite Twenty-third street, about three miles southeast of the present union depot and about 30 ft. above it, where it is safe from such floods as put the old station out of service in 1903. The station building is four stories in height above the basement or track level, with a sub-basement for express and baggage. It faces to the south on a large plaza covering two city blocks, purchased for this purpose by the terminal company. The creation of this plaza required the removal of 630,000 yds. of earth and rock, as the original site was a high hill sloping directly to the track. Beyond a wide boulevard this area will be parked, and the city will grade approaches to the streets on top of the hill. The Park Board of Kansas City is now considering sloping a portion of the hill to the level of the plaza as far south as Twenty-fifth street. The plaza is on the level of the main floor of the station, or one story above the tracks and connects directly with Main street and Broadway.

The main station building is "T" shaped with a stem projecting out over the tracks. The head house is 510 ft. long and 150 ft. wide, while the portion over the tracks is 410 ft. long and 165 ft. wide. The building is of Bedford stone with granite trimmings on the faces and bush hammered concrete in less important places. The exterior walls are of massive masonry, the Bedford stone being backed with brick, while the interior is of steel frame construction with reinforced concrete floors throughout. The foundations for the main building are carried to rock, while the train shed piers are supported upon rock upon spread

The New Union Station—Looking East over Express Building.

footings resting on undisturbed natural soil or on Raymond concrete piles where there is a considerable depth of recent fill. Provisions are made for extension of the building over eight additional tracks which may be required in the future, giving 50 per cent. additional space for standing trains and waiting room.

The main or plaza level will be devoted to facilities for the public, all of which are on this floor, while the three upper floors over the end wings will be given over to general offices for the terminal company and tenants whose business is associated with that of the railways. Two main entrances lead from the plaza to the grand lobby in the center of the building. This room is 230 ft. x 100 ft., and is 85 ft. high, being open to the roof. Three large arched windows face on the plaza. With the exception of the ticket office, which is located under the center window on the south side, this lobby will be free of all obstructions. The lower portion will be finished in Tennessee marble with Kasota marble above. It will be lighted by large electroliers suspended from the ceiling.

Leading directly from the grand lobby, and extending over the tracks, is the main waiting room. This room is 54 ft. high, with a flat ceiling, and will be lighted by side wall lights. On each side of the main waiting room are train gates leading to the different platforms. Concourses are provided just outside these gates in which are located the stairways and elevators. Entrance to the station from trains will also be gained by these same stairs and elevators to the concourses from which the passengers will pass directly to the main lobby without going through the waiting rooms.

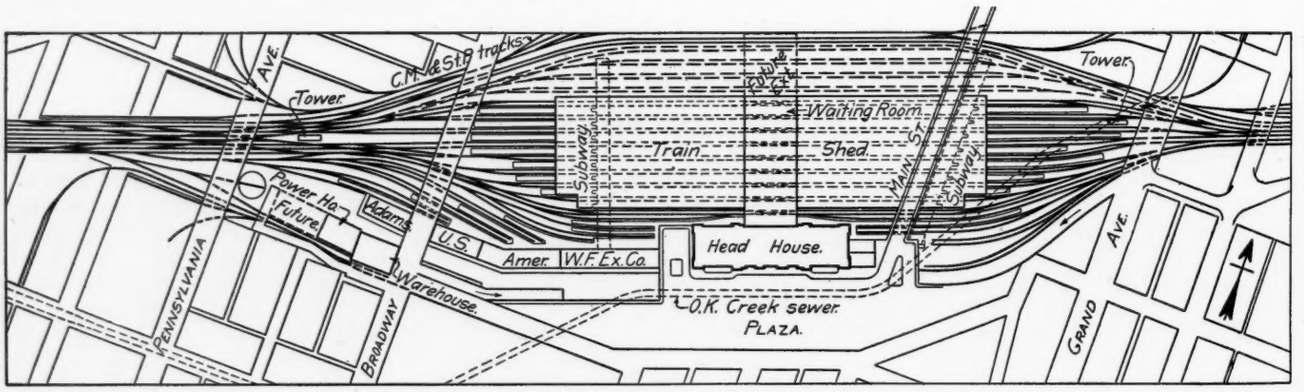
A lunch room, restaurant and women's waiting rooms are located in the east wing, directly off the grand lobby, while baggage and check rooms and men's waiting rooms are located in the west end. A drug store, newsstand, etc., will be along the north side of the main lobby. A covered cab-stand is provided on the plaza level along the west end of the station.

The basement or track level floor will be devoted to commissary, baggage and mail rooms. Baggage and mail will be received from a driveway on this level under the plaza, which connects with Grand avenue and Broadway, and will be lowered from this floor to the sub-basement from which two tunnels pass under the tracks beyond the ends of the station, with elevators to each platform. In this way all trucking at the track level is avoided and interference to passengers is eliminated. The interchange and sorting of mail, baggage and express, will be confined to this sub-basement level. The express business is also taken through these tunnels, and the sub-basement to the express building, a two-story structure with sub-basement west of the station. This building is 1,000 ft. long and 60 ft. wide, and is divided for the use of the four express companies operating into Kansas City. Offices for the use of these companies will be provided on the second floor of this building. A power house to provide, heat, light and power for all purposes about the station, at the coach and engine yard at Southwest boulevard, and for the interlocking towers at each end of the yard will be located opposite the west end of the express house.

Sixteen through passenger tracks are provided in addition to two thoroughfare tracks. The tracks are built in pairs, alternating 12.5 and 31.5 ft. centers, with concrete platforms between 8 in. above the top of rail. No special track construction will be provided. Each pair of tracks will eventually be connected by two crossovers opposite the center of the station, affording flexibility of train movement. Low train sheds 1,400 ft. long will be constructed over the tracks. All trains will pull through the station and stop with the baggage cars near the tunnels leading to the baggage and mail rooms, and the passenger cars near the stairways. In addition to the through tracks, several stub tracks will be provided at the east end of the station for the handling of mail cars, while similar tracks will be built opposite the express rooms at the west end for express business. Two of these latter tracks will be depressed so that the floor of the car will be level with the express room floor to facilitate loading.

BELT LINE CONNECTIONS.

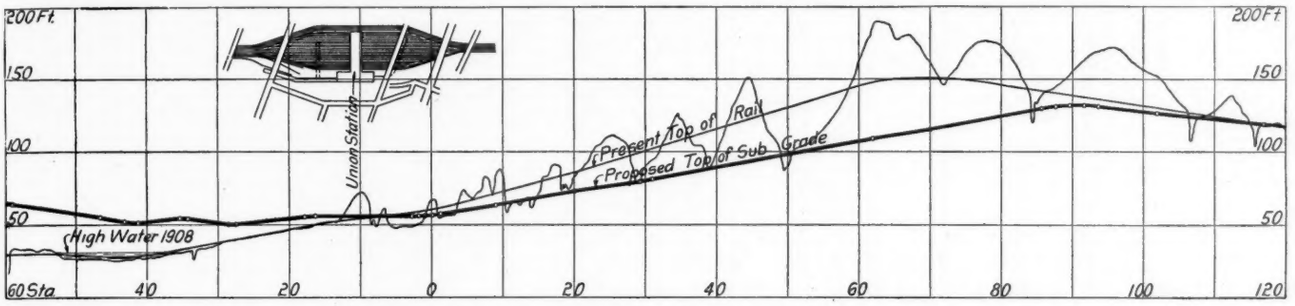
Four main tracks will lead east from the new station to Sheffield. West of the station to the Frisco crossing there will be six main tracks, the two outer tracks all the way from Sheffield to the union station being for freight, while the two center southerly tracks will be used for passenger movements. Between the station and the Frisco crossing all tracks will be used as may be found convenient, for passenger movements, for freight movements or for movements of empty equipment to and from the coach yards.



Track Layout Through Station.

At Southwest boulevard, a short distance west of the station, it was originally planned to separate the grades of the freight and passenger tracks, the freight tracks descending while the passenger tracks rise to a higher level. Under this plan the freight tracks would cross the Kaw river at the site of the present bridge and at practically the same elevation, turning abruptly to the west just across the bridge and continuing to Armourdale yard. A single track freight line connects the west end of this yard with the Union Pacfic and Rock Island at Clark Junction. Connections from this low level freight line will be made with the Santa Fe, Frisco and Missouri, Kansas & Texas on the east side of the Kaw river, while a low level freight line will extend through the center of the present yard south of the union depot to a connection with the roads entering over the Hannibal bridge and with a north side belt line. The high level, or passenger, line will extend across the Kaw river on the upper deck of the same bridge, which carries the freight line, and will then divide into two double track lines, one extending north on a high steel viaduct across the present Rock Island and Union Pacific tracks to a connection with the Missouri Pacific main line to Omaha, the other turning west and descending to a connection with the Union Pacific and Rock Island. At the present time this high level line has not been definitely author-

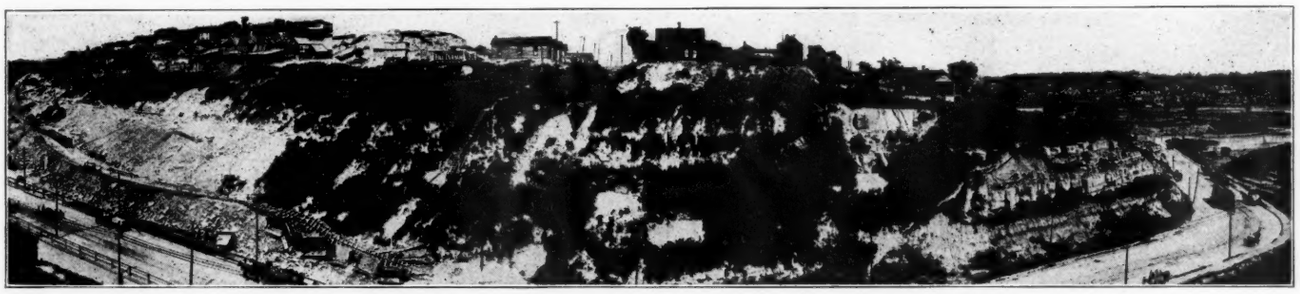
ized and the low level line may eventually be used for passenger traffic also. Another double track high level passenger line leaves the main track at Southwest boulevard and follows around the face of the bluff to a connection with the Burlington, Wabash and Rock Island near the Hannibal bridge. From Sheffield to the Hannibal bridge along the Missouri river the belt line for freight traffic will consist of two tracks, one of which will be



Profile Through Big Cut East of Station.

turned over by the Alton, and the other of which is now being built. The construction work along this freight line is very light.

When these lines are completed, facilities will be provided for direct and expeditious movement of both passenger and freight traffic without interference with each other, and with no railroad grade crossings on the passenger lines except three close together at Sheffield, plans for the separation of which are now being considered. All crossings of street and railway tracks



Burlington Connection Shortly After Work Was Started.

Burlington Connection on April 1, 1913.

along the passenger line will also be separated, and there will be few grade crossings with streets on the north side freight line.

EXCAVATION WORK.

This extensive track arrangement requires a large amount of excavation, the heaviest work being the reduction of the grade on the existing line east from the station site through the divide between the Turkey Creek and Big Blue valleys from 1.5 per cent. to 0.9 per cent. The heaviest cut on the old line was about 40 ft. deep, a short distance east of Woodland avenue. On the new grade the tracks are being lowered 38 ft. further at this point, and the cut is being widened for four tracks, where it formerly held but two. The lowering of the tracks in this cut has presented some interesting problems, for the main line must be kept open for traffic at all times, as it forms the entrance for three roads to the present union station, and also for a heavy freight business, with a total of about 150 train movements every 24 hours. In addition, a number of industries are located along these tracks, and it was necessary that the track connections to these industries be maintained with comparatively little interruption.

This cut is about two miles long and requires the removal of about 1,000,000 yds. of earth and rock, of which about 750,000 yds. have been removed up to the present time. Because of the congested conditions, it has been necessary to give up one track to construction purposes and to separate the remaining track as a single track main line within the limits of the work. A block averaging about three-quarters of a mile long is established, crossovers are placed at each end and the intervening distance is operated as single track with telephone block.

Because of the narrow right-of-way owned and the difficulty and expense of securing additional land in a well built up residence and industrial community, retaining and facing walls are required in the deep portions of the cut and are being built as fast as the excavation proceeds. The material in this cut consists of a heavy clay overlying rock which is badly fissured and broken. In excavating through the rock it was first intended to use a Sullivan channeling machine to secure vertical faces for about 1,200 ft. in the deepest portion of the cut, in this way reducing the amount of retaining walls required, but the rock

was so fissured that it was impossible to use the channeler with any degree of success. About 60 per cent. of the material consists of rock and shale which has to be shot, requiring very careful handling of explosives. The material is loaded by steam shovels into flat cars and 12 yd. Western air dump cars, and is hauled over the main line to fill the Blue River and Southwest boulevard yards and to raise the main tracks west of the station, 500,000 yds. of filling being required between Grand avenue and the Frisco crossing alone. The operation of these dirt trains on the main line results in considerable delay to the hauling trains, but in spite of these unfavorable conditions, the shovels have made very favorable records.

As the cut is lowered the amount of water coming into it increases, and it is necessary to keep outlet ditches open. In

Abutments for Twenty-fifth Street Subway.

the final arrangements, a sewer ranging in size from 48 in. down, will be laid between the two center tracks sufficiently low to remove surface drainage and seepage, and to drain the wire conduit which will also be laid in the retaining walls through this cut. All sewers and water mains had to be lowered below the new grade in advance of the steam shovel work and because of the depth of the cut this has made very expensive work in certain places. Also, the fact that the city authorities required that all street car lines be kept open while the work is in progress and that only every other street without car lines could be temporarily closed, complicated the situation.

Another piece of heavy grading work is on the high level

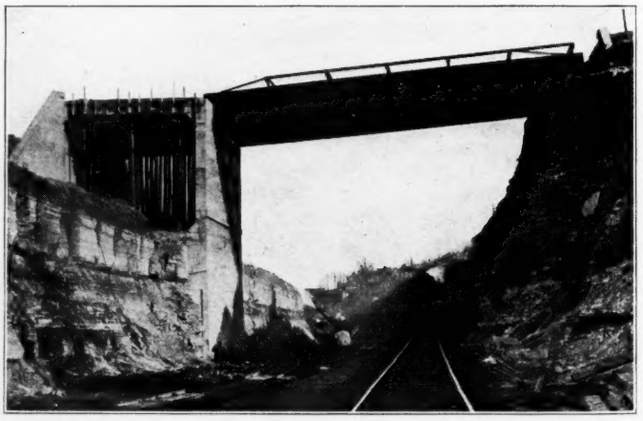
Concrete Mixing Plant in Slab Yard Near Big Blue River.

Burlington connection between Southwest boulevard and the junction with the present tracks at St. Louis avenue, a distance of 9,300 ft. This double track passenger line is being built at an elevation considerably above that of the old yard alongside and requires the moving of 90,000 yds. of material, 40 per cent. of which is rock. The location of this line rendered necessary a change in several streets and the construction of several retaining walls to support the hill and streets above. Brook street is now being moved inside the curve from Twenty-fifth street to Allen avenue, and Allen avenue in turn is being moved further up the slope. The accompanying cross section and photographs give an idea of conditions at this place. One of the retaining walls is 1,700 ft. long and varies in height from

Circular and Rectangular Sections of O. K. Creek Sewer.

14 to 39 ft., with a maximum surcharge of material of 35 ft. Over 30,000 yds. of concrete is required in these walls and other work on this connection.

Allen avenue varies from 10 to 50 ft. above the tracks, and is 50 ft. wide. The railway company is required to do all the work in connection with building the street. At one point it was necessary to move two 20 in. and one 30 in. high pressure water mains which were laid up the slope of the hill. To do this a tunnel 240 ft. long was built, 100 ft. of which was inclined upward at an angle of 45 deg., and the three pipe lines were placed



Box Abutment Under Construction for Woodland Ave.

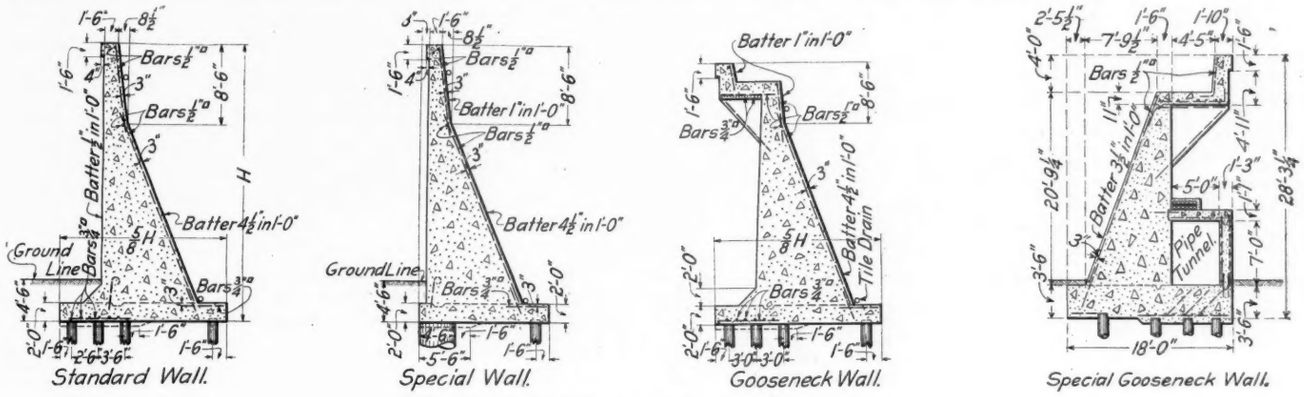
in it. In this same vicinity a 150,000 gal. oil tank belonging to the Frisco also had to be replaced with another located further up the hill. Because of the non-interference with traffic, the grading on this connection was let by contract. All other grading work, however, is being done by company forces.

YARDS.

Facilities for the handling of passenger engines and equipment will be provided by the construction of a yard in the triangle between the main line, the Frisco tracks and Southwest boulevard, a short distance west of the new station. At present each railway takes care of its own equipment, hauling trains in some instances three or four miles from the station to the coach yard. A number of the roads will use these new facilities immediately upon the opening of the station, and it is expected that eventually all will do so, although, for the present, as one or two of the roads have recently made extensive additions to their coach yard facilities, they may continue to use them. Complete

facilities will be provided for the care of locomotives and passenger equipment. A roundhouse and coal chute, water cranes, coach cleaning yard and icing facilities are all being constructed. About 175,000 yds. of filling was required for this yard, all of which is in place, this material coming from the station site and from the big cut.

Two yards were provided for freight traffic, one at Armourdale in the Kaw river bottoms at the west end, and the other just east of Big Blue river. At the present time the terminal railway will not act as a belt line to transfer traffic between the different roads, although this may develop at some future date.



Standard and Special Retaining Wall Sections.

However, a large and increasing number of industries are located along the lines of the terminal company and freight for these industries is delivered to the roads by the terminal. The two yards are primarily for the interchange of this business between the terminal company and the other roads. They are so located that those roads entering from the west or over the Hannibal bridge will exchange freight through the Armourdale yard, and those entering via Sheffield will deliver in the Big Blue yard.

The Armourdale yard is a flat yard with 26 tracks, in addition to two main tracks and a passing track along the north side. The layout is clearly shown in one of the accompanying photographs. A six track rectangular engine house, with a capacity of 12 engines is located at the west end of the yard for the use of switch engines. A small machine shop for making light repairs is also built in connection with it. A 100,000 gal. steel oil tank is provided for the storage of fuel oil which is used by the terminal company engines.

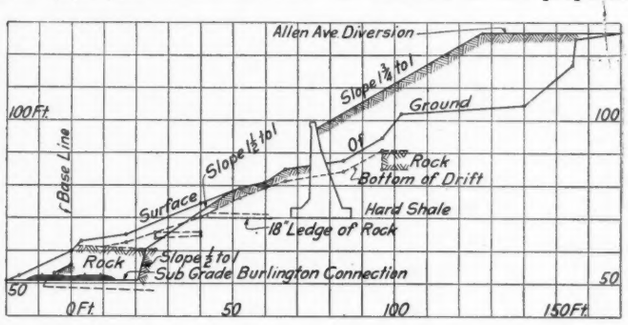
The Armourdale Yard.

The Big Blue yard is located between the Alton and Santa Fe tracks east of the Big Blue river. To make room for this yard it was necessary to move the Alton tracks north for a distance of about a mile and to construct a new bridge for this line across the river. The grading here was considerably heavier than in the Armourdale yard, the material being brought from the big cut. This yard will also be a flat yard. Complete facilities for the care of switch engines will be built here ultimately, and it is planned in the future to erect a machine shop capable of handling all classes of locomotive repairs.

The original ordinance provided that four freight stations be built for the handling of local and team track freight for all roads. It was specified that one of these be located at McGee street just east of the new station, one near Norton avenue and Fifteenth street, another in the Blue Valley just north of Sheffield, and the fourth near Grand avenue and the Alton tracks on the freight line. The McGee street freight yard, which has recently been completed and is now in service, includes a brick freight station 56 ft. x 176 ft. in size, with two platform tracks and 17 team tracks, with a capacity of 300 cars. Work has not yet been begun on the three other yards.

BRIDGE WORK.

A very important feature of the terminal improvements is the bridge work, the work already authorized being estimated to cost over $4,000,000, and requiring over 27,000 tons of steel, while over $1,000,000 additional work is included in the proposed double track, double deck bridge over the Kaw river and the steel viaduct for the high level passenger line in Kansas. The majority of this work is for viaducts and subways in streets, it being necessary to reconstruct 13 viaducts, to construct 11 new viaducts and 11 new subways, and to reconstruct one subway.



Cross-Section Showing Work Along Burlington Connection.

If built the most important structure will be the two deck bridge across the Kaw river west of the new station, which will consist of two 300 and one 140 ft. spans. The two 300 ft. spans will be through spans for both decks, while the shorter span will be built as a deck structure for the upper level. The bridge is designed for Cooper's E-60 loading on all four tracks. About 4,800 tons of steel will be required for this structure, which will replace another bridge on the same site and will rest upon the present piers which were carried to rock when the present bridge was built in 1907. The high level passenger line viaduct in

Kansas will be about 12,000 ft. long and will require about 15,000 tons of steel.

The standard construction for street viaducts is steel deck girders resting on concrete abutments and piers, the lower surfaces of these girders being encased in concrete with a cement gun to protect them from the action of the locomotive gases. Much trouble has been experienced here with the corrosion of steel in the older structures, and it is planned to prevent this in future works. Likewise, trouble has been experienced in one or two cases with the gases attacking concrete, but it is believed that this is the result of the chemical action set up between the stone, which is a local limestone, and the gases. The clearance at the viaducts ranges from a minimum of 19 ft. to a maximum of 56 ft. at Woodland avenue. All viaducts are designed to carry street cars, whether tracks now pass over them or not. Concrete decks are placed on all these viaducts, which are then paved with creosoted wood blocks. Both brick and wood block pavements are being placed in the subways.

The subways are of the flat concrete slab type resting on abutments and curb and center supports. An important departure from standard practice is being made here in the casting of the entire structure above the footings, including the vertical pillars and cross girders, as well as the top slabs for a number of these bridges in units at one central slab casting yard and erecting them with a derrick. Eight subways are being built in this manner, while others will be built monolithic, because of local conditions. The first of these unit construction types of subways has recently been completed and was described in the *Railway Age Gazette* of December 13, 1912. A minimum clearance of 13 ft. is required in all subways, and 14.7 ft. where there is street car traffic.

Among the larger viaducts are the Broadway viaduct, just west of the station and a structure at The Paseo, one of the city boulevards. The Broadway viaduct is 80 ft. wide and 700 ft. long exclusive of approaches, or 1,300 ft. long overall and is estimated to cost $475,000. The Paseo boulevard structure is 1,000 ft. long, including approaches; 50,000 yds. of earth being required for the grading of these approaches.

One interesting detail of the construction work which introduced several complications was the necessity of maintaining connections with the industries located on the old track level through the big cut. This required the construction of three bench tracks north and one south of the main line, leading off parallel to it on steeply ascending grades. Where these bench tracks pass under viaducts, box abutments have been provided as shown in the photograph of the structure at Woodland avenue, these abutments being found to be practically as cheap as posts and buttressed abutments where the excavation for the buttressed abutments was heavy. Another interesting detail was developed in the design of the retaining wall along the north side of the tracks between the new station and the passenger coach yard. It was necessary to carry a 5 ft. x 7 ft. steam tunnel for this distance of 6,200 ft., and in certain places the only suitable location was in a recess in this retaining wall. The special design of this wall is shown in one of the accompanying drawings, about 1,000 ft. of this section being built.

One of the conditions imposed upon the terminal company by the city in its ordinance was the construction of a large sewer 6,225 ft. long from Twenty-second street and Grand avenue to Turkey Creek, although this sewer laid for the greater part of the distance entirely out of the railway property. This work required an expenditure of about $930,000. With the exception of a 1,200 ft. tunnel near the center, the sewer was built in an open cut of 55 ft. maximum depth. The sewer was circular in section, 25 ft. in diameter at the upper end, gradually enlarging to a double 15 ft. 8 in. x 15 ft. box at the lower end, the rectangular section being designed to get the sewer under certain streets. Over 180,000 cu. yds. of excavation and 38,000 cu. yds. of concrete were involved.

Automatic signals will be provided on both the freight and passenger lines, the average interval being one mile, although the signals will be placed on the grades to secure a uniform time interval. Upper quadrant R. S. A. standard signals will be adopted outside of the station with dwarf signals through the station limits. While the details of the interlocking plants have not been definitely determined upon at this time, there will be a power interlocking plant at the east end with about 110 units and one at the west end with about 150 units, power for these plants being supplied from the central power house. Other towers will be built near the Santa Fe crossing at the east end, at Sheffield, at the Frisco crossing and at the Santa Fe crossing near the Kaw river, while the plants at Bridge Junction and at the union depot will be rearranged.

At the present time the exterior work at the new station is largely completed, and it is expected that the station building will be entirely completed late this year. It is expected that the excavation of the big cut and along the Burlington connection will also be completed about this same time. The Armourdale yard is now completed and in service, while the grading is finished for the Blue River yard. Seven viaducts are completed, while three others are completed with the exception of placing the floor slabs.

This work is all being handled under the direction of John V. Hanna, chief engineer, Kansas City Terminal Railway; A. C. Everham, assistant chief engineer; G. E. Tebbetts, bridge engineer; J. Tuthill, building engineer; S. O. Swenson, electrical engineer; G. E. Ellis, signal engineer, and A. H. Stone, assistant engineer. The construction on the west, central and eastern ends of the work is being handled under the direction of J. M. Hammond, E. P. Weatherley and D. S. McCalman, respectively, division engineers, to all of whom we are indebted for courtesies in connection with the preparation of this article.

DISCIPLINE ON THE BALTIMORE AND OHIO.*

We read much of misfits and "square pegs in round holes" in the industrial world, and in the railway service come in contact with a little of it, but when one delves into the records for the number of train-service men removed for incompetency he is struck by the small percentage he finds. On the other hand he finds that nearly all dismissals are due to no other reason than downright failure to comply with rules and regulations thoroughly understood by those removed. Harrington Emerson and Dr. Hugo Münsterberg have without doubt made great strides in the science of interpreting individual characteristics through psychological and physiognomic traits, particularly in those operatives requiring much dexterity in their work; and while every railway officer responsible for recruiting and strengthening his train-service organization would eagerly take advantage of the fruits of this service, he has learned by experience that he does not need mechanical geniuses nearly so much as he does young men of healthy mind and body and endowed with what is commonly known as mother wit, good common sense and an ambition to get along in the world. By the exercise of close scrutiny of applicants, and his fairly well developed knowledge of human nature gained in the school of experience, he is reasonably well qualified to select the right kind of men, yet at the same time he is not unmindful of the surprises in store for him arising from the complexities and varieties of the human family: "nature never rhymes her children, nor makes two men alike."

It is possible to make discipline so severe and clock-like in its precision as to vitiate initiative and to finally instill in the minds of the rank and file the feeling that the railroads existed principally for the sake of discipline, and not discipline as one of the important elements in the operation of the railroads.

The time-honored custom of taking men out of the service

*Extracts from a paper by Frederick C. Syze, trainmaster of the Baltimore & Ohio, St. George, S. I., N. Y., read before the New York Railroad Club, May 16.

for from one week to three months for violations has never been a marked success, and frequently has imposed upon the supervising officer the unpleasant duty of temporarily, at least, depriving a man's family of its means of sustenance through no fault of its own; the family was punished more than the real culprit. . . . I have known many instances in which men have courted a suspension in order to get time off for pleasure or for some other purpose.

The Brown system of discipline was expected some ten or fifteen years ago to universally supersede the suspension system, but I have been told it did not prove very effective except where there was already a good class of men who took great pride in keeping their records clean.

Mr. Syze said that he had not fully informed himself concerning the progress of the Brown system on other roads lately, and he went on to describe the action of the Baltimore & Ohio in doing away with suspensions by an order which was issued by vice-president A. W. Thompson last January, and which was noticed in the *Railway Age Gazette* at the time. Mr. Syze showed samples of the blanks used on the Baltimore & Ohio to keep the individual records of the employees. Continuing, he said:

As instructed by Mr. Thompson, all cases seeming to require discipline are promptly, though deliberately and thoroughly investigated before the record is made, for when it is seen by a careful consideration of an employee's record he is "slipping backward" in spite of admonitions, reprimands and "record disciplines," he is removed from the service, never to re-enter it. In this lies the great efficiency of this system of discipline. I find it is more effective in each instance, as so far used, than the old system of suspensions. In many cases disciplined employees have told me frankly that they would "rather serve time than sign that paper"; and others have said, "You can bet your life this is the last one of these things I'll get if I know myself." What better proof can one ask as to the value of this system? It has also been observed that extra men do not fare so well under the new system as under the old.

Unionism, as every supervising officer knows, is an element to be reckoned with in administering discipline, not unionism as a whole perhaps, but that misguided element of it which, for some reason I could never account for, seems to take umbrage at railway companies for having the temerity to exercise their rightful prerogative of cleansing the service of men of proved unfitness. On the other hand, I know old members of the brotherhoods who are broad enough and big enough to see things from the company's view point and who fully recognize the latter's right to run its own business in the interest of its owners and the public; but there is unquestionably a percentage of the younger element which relies, to a degree never intended by the father of organized labor, upon the unions for protection in their wrongdoing and indifferent service.

Although the use of intoxicants among train-service men is on the decrease, it is still one of the most troublesome problems to deal with, particularly as many men drink off duty and in places and ways that it is difficult to get sufficient evidence of to administer discipline. A great improvement has been made in the last few years, however, and encourages us to hope for a continued improvement in the future.

DISCUSSION.

It was agreed by all those who took part in the discussion that discipline was essential to the proper conduct of railroads as well as of any other business affairs, and also that to hold men in proper restraint, some form of punishment must be threatened or inflicted. The point was emphasized, however, that it is not the strongest man physically who rules, but rather the man of the greatest force of character and will. So the Baltimore & Ohio system that has discarded all penalties save the final one of dismissal for the incorrigible will be a success in the hands of a strong man. With a weak one the scheme would spell disaster.

"Discipline by commission" is in vogue on the Erie No decisions or penalties are imposed by the superintendent. Every infraction of the rules is investigated. Records of such investigations are held back until the Monday afternoon following their completion, when they are presented at a meeting of the division staff and discussed. The records are read, the character of the man involved is shown and, after a full discussion of the case, the staff recommends the penalty to be imposed. Discipline so administered produces good results. The superintendent has nothing to do with the matter, as an individual, as it is taken out of his hands. As a rule, there are but few appeals from the decision, and these are taken back to the staff.

The principle underlying this method is that discipline should not be administered by one man and be the arbitrary expression of his will. The overbearing, tyrannical superintendent of former days was the cause of the first banding togther of the men for self-defence, which by regular increments has led to the present attitude on the part of labor organizations.

The Brown system of merit and demerit marks was touched upon. It substitutes marks for suspension, but depends for its value on the care with which the marks are adjusted. Those who spoke recommended it where there is a high grade of men employed; men who take pride in clean records. But where there is a large, unruly and partially anarchistic element it is not successful. As the old dispensation appealed to fear, the Brown appeals to the pride of the man, and if there is no pride there is nothing to which to appeal to except the fear of dismissal. When the number of demerit marks approaches the dismissal point, the men become nervous and their very nervousness is said to cause mistakes.

Favorable mention was made of the idea that employment and discipline of men should be in the hands of an employment bureau which should maintain the records and discipline. It should have a board before which all matters could be brought. All men are not amenable to the same discipline. No wise parent attempts to treat all of his children in the same manner, and so the same treatment cannot be applied to the heterogeneous mass of railway employees; and yet there must be a semblance of uniformity. The ignorant man should be relieved and instructed. He should be shown and drilled in the importance of obedience and should be taught that if he will but obey, the permanency of his position is insured. If men cannot be kept in the proper way by kindly talk and exposition, then the question of dismissal is pertinent.

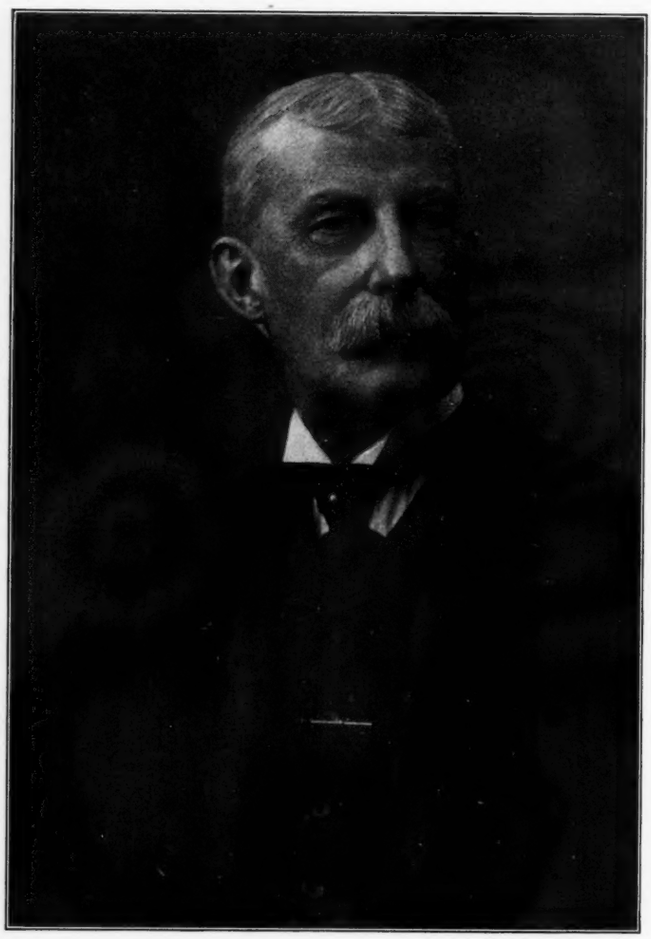
One speaker brought out the significant point that if men are to be reprimanded for mistakes, it is a great help to compliment them for good work. Judgment must play a part in the execution of every task. For the novice complete obedience is the only safe course; but, as he increases in knowledge and experience, he can lay aside the blind following of instructions for a wider latitude in which his personal judgment may play the guiding part.

There was general agreement that it was not best for each department to administer its own discipline, but that it should be done by a board representative of all departments, and, perhaps, even including a representative from the men. Then it should be realized that men can be led to any heights; but it is difficult to drive them. It is better to reform than dismiss. Old men should be retained, and new administrations should familiarize themselves with past records and not be swept away by a desire to use new blood. The responsibility of employing should not be put in the hands of subordinates, nor should the power to discharge. When the occasion arises for the administration of discipline it should be done fearlessly and without any consideration as to the attitude that the labor organizations may assume, first making sure that the decision is based on the merits of the case, the requirements of simple justice and the demands of public safety.

HENRY M. FLAGLER.

Henry M. Flagler died at his winter home, West Palm Beach, Fla., on May 20. He was 83.

At the time of his death he was chairman of the board of the Florida East Coast Railway, which had been built largely with his money, entirely under his direction and as a part of his general plans for the development of the east coast of Florida. Mr. Flagler made a large fortune in the development of the Standard Oil Company, but his chief interest in life in the last 15 years had been the development of the Florida East Coast, and the building of this railroad, which in many ways is the most unique of any in the United States, gives Mr. Flagler properly a place of no little importance in the railroad history of this country. The Florida East Coast runs from Jacksonville south along the extreme eastern shore of Florida to almost its southernmost end, and is there carried from the main line to the string of keys which ends with Key West. There is no more striking example in the history of western railroad building, of a country apparently without traffic whatsoever except that which would be developed after the building of a railroad, than this Florida East Coast line. The country through which it runs is largely a sand beach, with the everglades of Florida back of it. For through traffic it would have to compete directly with the Atlantic ocean. It must have taken imagination amounting almost to genius, as well as vast personal wealth, to begin such an undertaking as the building of this line. Mr. Flagler lived long enough to see the entire line, including the extension over the keys to Key West, in operation.



H. M. Flagler.

The 637 miles of line cost, with the equipment, $39,117,000, and was capitalized at $36,000,000, or about $56,000 a mile. Its earnings from operation in 1912 amounted to $4,427,000, or about $7,134 per mile. Its earnings, after the payment of expenses, rentals and taxes, amounted to $973,000 in the year 1912, or about 2.5 per cent. on the actual investment.

It is probable that Mr. Flagler never considered his railroad as an investment for the purpose of getting the highest possible interest on his money. It was built for the development of the country through which it runs, and as such it has already proved a success. Edwin Lefevre says that the value of the taxable property in the districts exclusively reached by the Flagler road has increased over $50,000,000 since he began it, and that there are today only about 25,000 acres under cultivation for fruit and vegetables out of a total of about 3,500,000 acres now available for such cultivation. In 1912 the Florida East Coast Railway carried 727,000 tons of freight, with an average haul per ton of 163 miles and an average ton mile rate of 1.772 cents, and with total freight revenue of $2,099,000. Vegetables alone furnished 63,258 tons of traffic and $380,923 of freight revenue. Even more remarkable, pineapples furnished 32,137 tons of freight and $165,667 of freight revenue. Thus over 18 per cent. of the total freight revenue was from vegetables and nearly 8 per cent. from pineapples. Lumber furnished the largest tonnage of any one class of commodities—145,000 tons—but, of course, takes a very low ton mile rate, furnishing but $183,000 of revenue.

Passenger earnings amounted to nearly 40 per cent. of the total operating revenue. Mr. Flagler furnished the money to build the Ponce de Leon and the Alcazar hotels at St. Augustine, the Breakers at Palm Beach, and other of the great Florida East Coast hotels.

Henry M. Flagler was the son of a Presbyterian minister of Canandaigua, N. Y. He started out to support himself when he was 14, and went into the grain business in Bellevue, Ohio, where he probably became acquainted with John D. Rockefeller, and before 1870 he was a member of the firm of Rockefeller, Andrews & Flagler, which in that year was dissolved and the Standard Oil Company formed. There is one story of Mr. Flagler's life that is probably so characteristic that it is worth repeating. When he first went to work in Republic, Ohio, he had a five-franc piece, accepted at that time for a dollar, and a few pennies. He never spent the five-franc piece, and in later life took a considerable pride in the possession of this particular coin.

John D. Rokefeller, in his random reminiscences of men and events, says of Mr. Flagler: "He invariably wanted to go ahead and accomplish great projects of all kinds. He was always on the active side of every question, and to his wonderful energy is due much of the rapid progress of the Standard Oil Company in the early days. It was to be expected of such a man that he should fulfill his destiny by working out some great problems at a time when most men want to retire to a life of considerable ease."

New Line for Belgian Congo.—The branch of the Great Lakes railroad, 167 miles long, starting at Kabalo, 50 miles above Kongolo, and ending at Lukuga on Lake Tanganyika, opposite the German post Ujiji, is well under way. On December 31, 1912, 60 miles of rails had been laid, and for 40 miles farther the grade was completed, as is also the 150-yd. bridge across the Luizi. This road should be finished by the end of 1913 or soon after. Coal was discovered near this line a year ago, about ten miles from the lake.—*Mining and Scientific Press.*

Brazilian Railway Concession.—The President of Brazil has signed a decree granting the petition of the Companhia Estrada de Ferro Dourado, concessionaire of a subvention for building a railway which was to have started from Ibitinga, running to Rio Tiete, thence to a convenient point on the Bocaina-Bariry branch, serving the town of Jahu, and terminating at Ayrosa Galvao. The petitioners asked for the substitution of Sao Joao das Tres Barras for Ibitinga as the starting point. The length of the line is to be 33 miles.

THE PROBLEM OF RAILWAY VALUATION.*

The Change in the Public's Attitude Toward the Carriers and the Various Difficult Questions It Has Raised.

By Logan G. McPherson,
Director of the Bureau of Railway Economics.

For several months the Bureau of Railway Economics has been studying the question of a valuation of the railways. It has been our hope to issue first a preliminary and elementary exposition of the various factors that necessarily must be taken into account in making such a valuation and of the arguments that must be taken into consideration. It is the hope to follow this preliminary exposition with a rather complete digest of what has to this time been said upon the entire subject. We thought at first that the preliminary exposition which perhaps will be entitled "A Primer of Railway Valuation," would be rather a simple matter; that it could be prepared in comparatively a short time and that we would then devote our energies to the complete digest.

As, however, we began to study the subject, so many different points arose, there were so many arguments bearing upon every point and often in extreme conflict, that it was necessary to endeavor to get our bearings. We have therefore read through the existing body of literature upon this subject, have made an elaborate collection of all of the expressions that have been worth while upon the different points involved, have classified these expressions under various headings, and have given careful consideration to all of them.

The result has been to make very clear, what was apparent in the beginning, that there is a fundamental difference of opinion not only as to the use to which a railway valuation can be put, and as to how it should be made, but as to the social point of view from which the subject is approached.

As one of the best ways to clear up one's own mind in regard to a proposition is to be obliged to state that proposition. I have been very glad to accept the invitation to speak upon this occasion in the hope that what I am struggling to express may, perhaps, serve as a statement preliminary to the preliminary statement which the Bureau of Railway Economics hopes to issue.

Once upon a time when I had been designated to open a discussion at a meeting of an economic club, the chairman in his introduction gave me a sly dig by remarking that he hoped I would present the situation as it then existed, and not as it had previously existed, but that of course I was welcome to present it anyway I wanted to. My reply was that I am constitutionally and temperamentally unable to present any subject in the light of the present without developing it in the light of the past. Therefore, with your kind permission I shall endeavor to lead up to what seems to me to be the beginning of the demand for a valuation of the railways.

There was a time, of course, when there were no railways, when there were no great mills and factories. This was before the use of steam. In Europe in past centuries there have been laws limiting the prices of commodities: there were a few of such laws in the early days of our colonies, but they were an inheritance from Europe and rapidly fell into disuse. The spirit of our forefathers in this country was that of individualism. Opportunities of every kind were freely open to every one with the capacity to use them. The right of unrestricted and unregulated individual enterprise was cherished as an essential part of individual liberty. In the matter of prices, generally speaking, the buyer got as much as he could for what he had to sell, and the purchaser paid as little as he could for what he had to buy. It was thought that if the seller asked too much, or if it were found that he was making large profits other producers would enter the market and the price would be brought down to the lowest level at which there would be sufficient production to supply the demand. This, speaking generally, was the theory of competition, of a fair field and no favor, when men's valors were considered their own best gods.

THE OLD ATTITUDE TOWARD RAILWAYS.

When the railways were a demonstrated success this country wanted railways more than anything else and the people went to any length to get them. Until well along in the nineteenth century this country had more land than it knew what to do with. In the undeveloped regions it could be had not only for the asking, but for the taking. Homestead acts and the doctrine of squatter sovereignty were designed to bring settlers to the land. Not infrequently a settler took title to more land than he could use, to more land than he had the tools and appliances for cultivating. There is a story of a man who sent his son to see if he could not get a mule in exchange for three or four acres of land. The boy came home, reported that he had the mule, that he succeeded in slipping another acre over on the man he had bought it from, making him take five acres instead of four. Thousands of acres of land in what was then the wild west were bestowed upon anyone who would offer to build a railroad. Sometimes every alternate acre was thus bestowed, and the price of the remaining alternate acres doubled, or more because of the enhancement that railway service would bring in their value. This land as a rule was of little benefit to a railroad company until the railway had been built and a measure of traffic had developed.

It was expected that the railways would profit from the increase in the value of their land that would result from the development of traffic. That was the inducement held out in the grants of these lands to the railways. It was expected that the multiplication of railways would establish competition between them and that this would insure fair charges and good service. Therefore, the railways were unquestioned in their right to administer their property in the same manner that other business enterprises administered their property. Indeed, in those days it was an accepted principle that a man was welcome to whatever he could make out of any tool or instrument that he had. If with a set of tools a carpenter by skill and knack could make more money than another carpenter with tools equally good, he was welcome to it. If a wagoner who kept his horses in good condition and his wagon in good repair and was industrious and thrifty made more money than a rival wagoner, lacking these qualities, he was welcome to it. The faith of the people in the restraints of competition dispelled all fear of unfair charges for transportation; the love of individual liberty forbade all thought of interference with business enterprise.

It must ever be borne in mind that the whole theory of competition implies inequality between the competitors. To the swift, the strong, the farsighted, and often to the cunning comes the greater reward. In the United States the railways were built and they were operated upon the competitive theory. It developed that the strongest competitors for the service of the railways reaped the greatest profit from the service of transportation. Larger shippers secured lower rates and better facilities than the small. Industrial and commercial centers served by several competing railways obtained the benefit of lower rates than were accorded smaller communities with lower competitive strength.

The efforts of the country to obtain railroads led to its being supplied with more railways than were needed at the time. The

*An address delivered at the banquet of the American Association of Freight Traffic Officers at Washington, D. C., on May 16.

fact that many railroads were built in advance of traffic and that there was bitter competition between redundant railways led to bankruptcies and reorganizations. Investors lost money, and their losses made other investors chary. They would not risk their funds except upon liberal inducements. They bought bonds at a discount with stock thrown in. Here again, those who furnished the capital that enabled the railways to continue in service were encouraged to look to the future for their reward.

THE DEPARTURE FROM THE COMPETITIVE THEORY.

Now, as we all know, in certain lines of our industrial activity there has been during the last twenty-five or thirty years or so a departure from the competitive theory. Workingmen have allied themselves in trades unions for the purpose of obtaining a certain uniformity of wages. Large producers of many commodities and large dealers in many kinds of merchandise have entered into alliances to maintain agreed prices. The railways at various times entered into agreements to maintain rates, but they were never very successful. The people didn't like such alliances; they wanted competition among the railroads to continue, and therefore they established the Interstate Commerce Commission and enacted laws which have made competition in rates well nigh impossible. The commission has been enjoined to see that rates be reasonable. From the days of the teamsters and stagecoaches the common law has ordained that rates for transportation be reasonable.

This Association of Freight Traffic Officers is composed of the very last men in the world who need to be told how the freight rate systems of the United States have developed. Broadly speaking, rates have been made that would get the traffic. Although the freight rate structures of the United States have often been characterized as a chaotic jumble, the truth is that they have been the resultant of varying forces; and, broadly and generally speaking, have well served the needs of the industry and the commerce of this country. This does not mean that they have always satisfied all of the industrial and commercial competitors. Far from it. As competition means the success of the swift, the strong, the far-sighted, and not infrequently the cunning, those who have been lacking in these qualities or in other respects have been deficient in competitive strength, and have sought the enactment of laws that would redress their weaknesses. They have had the sympathy of the great majority of the people of this country. It is said that as the railways are public servants, discharging what many have come to consider to be essentially a function of the government, they should treat all of the public alike.

Now, we are approaching the crux of the question. Upon the meaning, upon the significance, upon the construction which the people of this country place upon the public service character of the railways as set over against their character and necessities as private enterprises, depends not only the manner in which the valuation of the railways of this country shall be made, but the manner in which that valuation shall be used.

When this country was young, when land could be had for the taking, when cities were small, poorly lighted and the horse car was the means of urban transportation we did not hear anything of public utilities. As lighting by gas extended and gave way to lighting by electricity; as the cable car succeeded the horse car, and in turn has been displaced by the electric car; and as our cities have increased tremendously in population, it has become evident that a company having the electric light privilege or the local transit privilege, or the water power privilege for a particular city has a monopoly; that unless restrained it can fix its prices so high as to restrict the use of its service, or at a level that will give it profits far in excess of those obtained in business in general. There has been much litigation as to the amount of profit which should be allowed to such a company. It has been held that what such a "company is entitled to demand, in order that it may have just compensation, is a fair return upon the reasonable value of the property at the time it is being used for the public."

ARE THE RAILWAYS MONOPOLIES?

It is said that the railways are monopolies, and that as such their rates should be regulated. That the railways in respect to certain kinds of traffic partake of the monopolistic character every one knows; but no one knows so well as the men who constitute this association that the greater part of their traffic has always been competitive, and that they have had to fight for every ton of this traffic which their respective companies have carried. Now, it seems to me for this and other reasons that there is a very great distinction between a company having the exclusive right to furnish electric light to a city or electric transportation or water power, and a railroad company owning lines traversing a wide expanse, serving many communities and often under conditions which are not monopolistic. It has been held, however, by the United States Supreme Court in a very celebrated case, that of Smyth vs. Ames, in a decision rendered on March 7, 1898, "that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be a fair value of the property being used for the convenience of the public."

When the Interstate Commerce Commission was given the authority to determine what shall be a reasonable rate it found itself confronted with a series of freight rate structures in different parts of the country in which the rates seemed to be an inextricable maze. Therefore, it welcomed the decision of the Supreme Court in Smyth vs. Ames. Throughout the ensuing years it has besought the Congress to provide for a valuation of the railways of the United States, and it has not sought in vain.

I do not suppose that any member of the Interstate Commerce Commission would hold that upon the valuation of a railway alone can be determined just what shall be any specific rate. It is widely held, however, that a valuation of the railways will serve to determine what shall be the general level of rates. That is, that if a railway is to have a fair return upon a fair valuation the rates will be reasonable that will permit it to have such a fair return. Now, when we use such expressions as a "reasonable rate" and "a fair return," and "a fair valuation," I am reminded of the time when it is said that a considerable delegation of citizens of a foreign country went to the house of the prime minister. When he appeared upon the balcony and asked what they wanted, they said "We want our rights." He replied, "Very well, you shall have them." They went away satisfied. I am also reminded of that political convention at which when the committee on the platform were considering the tariff plank, one member suggested the expression, "We are in favor of judicious legislation in regard to the tariff"; and another member suggested an amendment making the clause read, "We are in favor of wise and judicious legislation in regard to the tariff."

WHAT IS A FAIR VALUATION?

What is to constitute a fair valuation and what is to constitute a fair return upon that fair valuation we do not as yet know, and it is to be hoped there will not be the devil to pay before we find out. There are many elements that enter into a valuation of the railways. The manner of determining the valuation of any one of these elements will depend in large measure upon the extent to which the people of this country regard the railways as the property of private investors, and the extent to which they regard them as public service corporations akin to the public utility corporations that furnish light and transportation and water within the limits of a municipality. Certain it is that when the railways of this country were built they were regarded from the standpoint of the investors as private property, their limitations as public servants did not affect the proprietary right to buy and sell real estate or other property at prevailing market prices. From this standpoint, which would seem to be guaranteed to them by the law of the country, the railways are certainly entitled to have their rights of way and their real estate in general valued at the prevailing prices for similar real estate; they are entitled to benefit by the enhance-

ment of value as much as farmers and other land owners are entitled to benefit by the enhancement of value which has come with a growing population and development of markets, an enhancement which of course would not have come without the means of communication and transportation which the railways have furnished. On the other hand, there are those who hold that as the railways perfom a public service they are not entitled to what is designated as the unearned increment in the value of their lands. These hold that a railway is entitled to a return only upon what the property of a railway has cost. They disregard excellence of location, excellence of administration, those economies which are due to managerial skill.

It has been the practice of many railway companies not to pay out all of their net profits to stockholders, but to reinvest a part of those profits in building up and extending the plant and equipment. There are railways which have followed this policy at all times; there are others which have followed it especially in prosperous years; there are many railways which for years habitually reinvested all of their profits without making any return to stockholders whatever. It is pointed out that inasmuch as all of these profits could have been paid out to stockholders and new capital acquired for increased capital expenditure upon which return would have had to be paid, it is no more than fair that return be allowed upon the reinvested surplus. Yet there are those who hold that surplus frequently signifies profits above fair return to stockholders, that it therefore belongs to the public and that even when reinvested in the property the stockholders are entitled to no return upon it.

FAILURE OF LAW TO KEEP PACE WITH ECONOMIC CHANGES.

In many cases lands have been donated to railways; that is, the passing of the title has been designated as a donation, although concession has been exacted from the railways as consideration. The government has in some cases in making such a so-called donation stipulated for concessions in the transportation of troops or the carrying of the mails. On the one hand, it is claimed that as such lands are held by the railways under proprietary rights they are entitled to a return upon them as property, to use them and to dispose of their use as property. On the other hand, it is claimed that as such lands are acquired without capital investment a valuation of the railways should take no account of their value.

These are but a few examples of the difference of viewpoint. It would be wearisome to enter into a discussion at this time of all of the factors that are affected by this difference of viewpoint. Are the railways to be valued at what they have cost, or at what it would cost to reproduce them, or upon the commercial or market value of the plant and going-business? These are but a few of the factors in regard to which there is difference of opinion, and each of these factors subdivides into manifold elements in regard to each of which there is difference of opinion.

It is not my purpose to endeavor to point out any solution. I have only hoped to indicate the seriousness of the problem and know that my effort has been all too inadequate. This much is certain, that the law has not kept pace with the changes that have occurred in our economic structure within the last generation. This was strikingly made manifest in the decision of Justice Hough in the Consolidated Gas Company case in which he first considered the value of the company's franchise from an economic standpoint, and then from a legal standpoint, arriving at conclusions that were respectively at variance. Another thing is certain, that whatever be the ultimate decision as to what constitutes a proper valuation of the railways and what may be the return to which they are entitled, that decision cannot be made retroactive throughout a regime during which the construction of railways as private property was encouraged, and their administration as private property was sanctioned by the law of the land.

There is another consideration which appeals to me as of foremost importance. A bank president once asked the head of a manufacturing establishment, who was endeavoring to negotiate a loan, just what were his "cold assets." The reply was that it was not so much the cold assets as the "hot assets" that brought about results. He said that anybody with the money could build or could buy a manufacturing plant, but that the selection of the proper men, the development of an organization in which one and all work together to promote economy and efficiency is a far more difficult task and entitled to the greater reward to the attainment of which such an organization is the most effective instrument. In the valuation of the railways, the so-called "physical valuation" which is but a valuation of the cold assets, are we not in danger of losing sight of the human element which alone can make these cold assets of use to the people?

Whatever may be the modification in our social structure, whatever may be the readjustment in our law, it behooves our country first and foremost to retain the services and stimulate the services of the efficient man, the man who can make two blades of grass grow where but one grew before, the man who can plan, design, and direct, the man who can bring about organized and efficient effort. It is to such men that we owe our present industrial and commercial development. It is through their efforts that the efforts of the multitude are lifted to a higher level and made more efficient in the service of the human race.

TRANSFERRING FLOUR AT FORT WILLIAM.

The new shed on the Canadian Pacific dock at Fort William, Ontario, is now in operation. It is a double decked structure, 950 ft. by 60 ft., the upper story for the reception of rail freight, and the lower one for freight unloaded from the vessels to be loaded on cars. For the unloading of freight from cars, there is a trestle along the rear of the building, the height of which is such as to bring the car floor at the level of the upper freight shed floor. The lower floor of the shed has a similar track for outgoing rail freight. One of the principal commodities handled is flour in bags, and a flour bag loading machine is used. Along the rear wall, and just under the upper floor, there is an endless belt, 26 in. wide, running the full length of the building, driven by a motor at one end. It is similar in every way to the usual conveyor belt, the upper part running over closely spaced idler pulleys. The belt is open the length of the building. At five points near one end of the shed, corresponding to the port openings of the vessel to be loaded, there are cross belts of the same width under the floor, at a slightly lower level, enabling the bags of flour on the belt to pass under the floor. These lead to chutes at the front side of the building, to which inclines can be attached for sliding the bags directly into the hold of the vessel. On the longitudinal traveling belt are dumped the bags of flour from as many cars as are ready to be unloaded, irrespective of the make of the flour. At each of the cross belts on which it is desired to divert the bags into the vessel's hold, there is arranged a vertical board, at an angle of 45 degrees to the motion of the longitudinal belt. This board, coming down just over top of the upper belt, diverts the bags of flour on to the cross belts; and thence they are carried into the hold. These diverting boards are set in vertical guides, each with a rope passing up over a pulley above. At each of the cross belts there is stationed a man who either leaves the board down and diverts the bag on to the cross belt or raises the board and allows the bag to pass on to that one of the cross belts to which it should be diverted. The belts move at a good rate of speed and, consequently, quick action on the part of the board operator is required; but by its means as many as five different brands can be unloaded on the belt simultaneously, and be diverted to the proper hold. It is the usual thing to unload as many as five 30-ton cars in an hour, or at the rate of 150 tons an hour.

RAILWAY STOREKEEPERS' ASSOCIATION.

The Convention at Chicago This Year Was More Than Ordinarily Successful and Included Several Important Reports.

The tenth annual convention of the Railway Storekeepers' Association was held at Chicago, May 19 to 21, J. R. Mulroy, general storekeeper of the Pullman Company, presiding. The opening prayer was offered by Rev. William E. Barton. Eugene Chamberlain, manager equipment clearing house, New York Central Lines, made the opening address.

President Mulroy, in his address, commented on the important work accomplished by the association in raising the standard of the supply department and reported a material increase in the membership of the association.

G. G. Yeomans in an address emphasized the great opportunity of all storekeepers in furthering the success of their respective roads. Their opportunities are unbounded and their importance may be appreciated when it is remembered that they handle each year supplies valued at about $250,000,000. About 9 per cent. of the gross earnings of railways is spent for material, or 17 per cent. when fuel is included. The great possibilities for savings were illustrated by the fact that about $220,000,000 is invested in material, a decrease of which to the smallest degree would represent a considerable capital that could be used for other purposes. According to statistics all the roads are carrying a year's supply of material on hand, a condition which could be much improved by the combined action of the storekeepers with the other departments.

The secretary-treasurer's report showed a membership of 744, including 150 new members. There is a cash balance of $886.81 in the treasury.

A resolution was adopted inviting the arbitration committee of the M. C. B. Association to attend the meetings of the association and participate in the entertainment features.

Piece-work—It was pointed out that the storekeepers were in a position to greatly benefit by the adoption of piece-work. J. H. Waterman (C. B. & Q.) reported splendid success by its use in his timber treating plant, where 2,000,000 ties, or their equivalent, were handled per year.

Stationery.—The stationery committee advocated the handling of stationery by the general stores organization rather than by a separate organization.

Lumber—The committee on the uniform grading and inspection of lumber advocated the advisability of adhering to the 13/16 in. car siding in reply to a request of a lumber dealer to adopt ¾ in. This was done to prevent, where possible, the use of re-sawn material.

INACTIVE AND OBSOLETE STOCK.

Five papers were presented on "Reducing Inactive and Disposing of Obsolete Stock." Abstracts of these follow:

E. J. Roth (C. B. & Q.):—All obsolete stocks are inactive, but of course all inactive stocks are not composed entirely of obsolete material. It should pass without question that the thing to do with obsolete material is to scrap it and utilize the scrap to the best possible advantage. Obsolete forgings can usually be worked over in a blacksmith shop into standard articles with a slight loss. The value of scrap brass is not much less than that of the manufactured product.

The real difficulty lies with the inactive stocks of standard material. The best remedy of course is prevention. With the better methods of arriving at the proper quantities of material to order, due to the almost universal use of stock books, there is no doubt that the percentage of inactive material to total stocks has been considerably reduced in the past few years.

There are certain stocks which from their very nature are and probably always will be inactive. Stocks of material carried for strictly emergency use are of this character. It is the practice on our road to carry emergency stocks of bridge lumber and piling and of track material on each operating division. These are charged to and are under the supervision of the division storekeeper. The quantity carried is determined in consultation by the storekeeper, the operating department and the bridge and building department. About all the storekeeper can do is to watch them closely and give special attention to particular articles which show the least movement. The accumulation of material by the operating and bridge and building departments is bad, for the time usually comes when a clean-up is made and the material is shipped back to the storekeeper, frequently increasing his stock of material of the kind shipped in beyond reasonable limits and giving him material which has often become obsolete while out of his care, but which could have been used if he had had it before.

In our experience the most effective remedies for reducing inactive stocks in storehouses and material yards have been:

First—Maintain stock books at all points where material is carried, whether this is directly in charge of a representative of the store department or of some other department.

Second—List all material of all kinds in the stock book.

Third—Carefully check the stock book to determine material that is surplus.

Fourth—Send with orders from division or district stores to the general storekeeper stock books or their copies and stock lists. Stock lists with a description of the material printed on them, containing information as to material on hand, due, ordered current year, ordered past year and surplus, if any, have seemed the better practice. This leaves the stock book in the hands of the stock man where it belongs, and the printing of the description of the material on the stock lists insures the material being listed on all reports to the general storekeeper in the same order and facilitates checking them with the orders in the general storekeeper's office. One of the other large railroads in the middle west is putting into effect a plan which appears very efficient and economical. Their storekeeper's stock book is printed in duplicate, two sheets being placed together, which are exactly alike except that the bottom sheet has perforations separating the entries for each month. A carbon sheet is placed between the sheets when stock is taken and after all the information has been filled in, the carbon copy is torn off at the perforations. These carbon copies for material in each classification are sent to the office of the general storekeeper where they are pasted in a printed stock book, a duplicate of the one which the storekeepers have. The slips from each store are identified by classification and page number and placed in the general storekeeper's stock book next to corresponding slips from other stores opposite the items they cover. This gives the general storekeeper a complete stock book for the entire line with very little if any additional work.

Fifth—When making orders consult frequently and freely with responsible officers in the departments using the material ordered for stock as well as for special work.

Sixth—Assemble surplus material as far as practical at the general or distributing store, where it is readily available for use at any point where needed, storing it with other material of similar kind so that it will be constantly before the stock man and may be used by him at every opportunity in filling orders—frequently by substitution, this always with the consent of the party ordering.

Seventh—Where surplus material is of such a character or conditions are such that it would entail unnecessary expense to move this to the general or distributing store, a special report to the general storekeeper or the general or distributing store of all such material with complete descriptions, etc., should be made.

Eighth—Advertise surplus material among the departments which might be able to use it. On this I wish to lay particular stress. We have found that with the knowledge which they get, from the periodical reports we make them, of engines, pumps, boilers, large pipe, second hand lumber, brick, track material, etc., etc., on hand, the engineering, operating, mechanical and bridge and building departments are frequently able to arrange their plans for work to use such material instead of purchasing new. The storekeeper must have a knowledge of the purpose for which such material was originally purchased or can best be used and bend his energies in directing toward it the attention of the men who order material for this particular kind of work.

Ninth—A surplus committee composed of practical men from the mechanical, engineering and store departments, periodically visits each storehouse and material yard, going over the stock in detail with the storekeeper and his stockmen, considering all surplus material of all kinds whether obsolete or not and authorizing scrapping of obsolete material or surplus material where, upon thorough investigation, this is found advisable.

Possibly the most important feature of our present plan is that of working closely with the departments who use the material. This accounts for a great deal of what success we have had. The storekeeper who can keep closely enough informed as to market conditions affecting time of delivery of material, and so gage his estimates of future requirements that he will not order and receive more material than he actually requires, will not have to worry much about inactive stocks.

H. A. Anderson (Pennsylvania):—There are several conditions which have heretofore been largely instrumental in the creation of surplus and inactive items:

First—The ordering of material in quantities largely in excess of actual current requirements.

Second—The ordering of material months in advance of requirements, considered necessary on account of stringent market conditions.

Third—The decrease of working hours and force.

Requisitions should be based on the average consumption for the preceding three months, considering amounts on hand and due on requisitions, as well as the length of time requested by the purchasing department in which to furnish material under normal conditions. There are, of course, many circumstances entering into this matter, over which the stores department has no control. This is especially the case on the larger systems, where heavier and more modern equipment is constantly being placed in service on main line divisions. This results in the transfer of the lighter equipment to branch line divisions, or the disposition of such by sale.

Changes in designs and standards are usually effected without regard to the stock of parts on hand made from previous designs, and have resulted in many items becoming surplus or inactive. To correct this, instructions should be issued that material of older design be disbursed until the exhaustion of the stock, except where a question of safety may be involved. In this latter event, arrangements should be made to have the balance of the original supply disposed of through the scrap account, immediately upon receipt of the new material.

It has often been considered necessary, particularly during periods when mills and factories are booking orders many months in advance, to request stores departments to anticipate requirements from three to nine months in advance of deliveries. This practice has also been responsible, in many instances, for articles finally finding their way to the lists of surplus and inactive material. The fact that manufacturers frequently fill orders in one consignment, instead of shipping in accordance with the delivery program as specified on requisitions, has a tendency to destroy the belief that such advance requisitions are necessary.

Decreases in working hours and force are productive, perhaps, of the greatest quantities of surplus stock with which we have to contend. Conditions making necessary such curtailment in hours and force are not discernible any great length of time in advance, and the reductions are made only when the question of expenses makes them imperative.

In determining what amounts shall be reported as surplus, care must be exercised to consider the issues of preceding months, and in the case of "seasonal" material, to issues during a corresponding period of the previous season. In addition, it is also essential that consideration be given the amount of stock permitted to be carried on hand, and the length of time required in which to replenish the stock by requisitions on manufacturers. After deciding upon surplus items, a list should be prepared and forwarded to the officer responsible, under the organization, for the transfer of such material. The list (upon receipt by the purchasing agent or general storekeeper), should be checked with all requisitions calling for the purchase of material. As a rule, the men doing such checking are those who have not had an active and intimate connection with supplies and for this reason detailed information should be such as would enable them to transfer an advertised article instead of allowing orders to be placed with manufacturers. Such transfer will be to the ultimate good of the railroads, even at the expense of a small charge for re-handling and movement over the road, as they will avoid the outlay of additional capital.

The accumulation of inactive and obsolete material has been brought about chiefly through the release of equipment, changes in design and standards and to reclaiming from the scrap of items without regard to requirements. There is little that can be done in the case of this material, lacking authority or abiliy to disburse the old standards until exhaustion of the stock, but to consign it to the scrap pile. The proper course would be to make disposition immediately upon the appearance of the inactive items. Having considered the disposition of an item after being reported as surplus for twelve months, and deciding to prolong its existence, except where, during such period, there may have been call for the article, it is thought that such item should be discontinued on the surplus list and included on the list of inactive and obsolete material. This inactive list should contain the same information as the surplus list, except that the entire stock, as a rule, should be shown. In the column "Number of Times Reported," the first appearance of the item should be indicated as "one." It should be necessary that its listing among the inactive items be continued only three or four months before again being considered for final disposition. This last "attention" should be given jointly by the representatives of the operating and stores departments, and, lacking visible use for the material, it should be scrapped and the difference between the carrying and scrap values debited to the expense account to which the material would have been charged, had it been actually used. In so disposing of either surplus or inactive material, particularly on the larger systems, it is likely that a small quantity of more or less serviceable material will be scrapped, but it is inconceivable that such seeming waste can total in money value the expense incurred by perpetuating the material in stock, considering the interest on investment and the clerical labor involved in handling and in monthly accounting for and reporting such items.

In connection with the lists which have been mentioned, it would be well to state that these would seem hardly necessary when the railroad is operating under the general storehouse plan. To such storehouses, we presume, would naturally be shipped all surplus and inactive material and the final disposition of it be there decided.

Finally, the fundamental principles in successfully controlling inactive and obsolete stock are harmony and co-operation between the operating and stores departments, first to avoid, if possible, the accumulation of such material, but lacking in this, to constantly keep the items of material before us and follow a regular system by which the disposition will be promptly accomplished.

E. J. McVeigh (Grand Trunk):—How do we acquire inactive and obsolete stock? There are several ways. One is by bad ordering; another, ordering material before the work to be done has been fully and carefully planned. Then there are, of course, the cases where our executives find it advisable to make changes irrespective of careful and proper planning. It is also created by changes made in our methods and equipment in an effort to

meet the changing conditions of our country. Under the system in vogue on most roads today the storekeeper cannot do very much toward minimizing this stock. I have found that in proportion to the quantity of material used by them, the departments ordering obsolete and inactive material are, the electrical, bridge and building, engineering, motive power, car department and stores. And they are guilty in the order as named. Unfortunately, there is a tendency toward the evil of dealing with the electrical department directly, and permitting the separate storehouse. The engineering department creates inactive, and at times obsolete stock, through the action of young and inexperienced men. The bridge and buildings department create inactive stock by ordering material that they hope, or expect, to use this year, but find they can't. And they create obsolete stock by making changes and getting away from standards. They may not always be at fault in the matter, but they do it.

The motive power and car departments create little inactive, but much obsolete stock, and this is natural, and we all understand it. Our engines and cars with their spare parts are constantly going out of date, and these must go to the scrap pile.

What inactive and obsolete stock does the storekeeper create? I confess I am at a loss to point out wherein he does this thing. He orders what he knows from his experience will be called for by the different departments. If the departments make changes without notifying him that such changes are to be made, and by so doing leave him with material on hand, is such material made inactive or obsolete through his action? I say, no.

Assuming that the storekeeper has the authority and facilities he should hold up requisitions for material that he knows will become inactive and obsolete. He should see to it that there is no such material scattered over the road under his jurisdiction, but that such material (and there will always be some in spite of all he and others may do to prevent it) is collected at the stores, all left overs, ordered by mistake, ordered in excess of requirements and scrap.

W. D. Stokes (Ill. Cent.)—In summing up the general efficiency of the supply department on a railroad, two things are invariably considered: first, the ability to satisfactorily and promptly deliver material as required for maintenance and operation, and second, the conservation of stock or material and the supplies investment.

The causes contributing to a surplus of either staple, hard or obsolete stock are numerous and do not always indicate, upon analysis, either carelessness or indifference. Change of plans involving special materials, work deferred on account of insufficient appropriation previously anticipated, transfer of equipment between operating territories, change of standards, and purchases in excess of requirements in taking advantage of favorable market conditions either of price or delivery, are the most frequent reasons and are perfectly consistent and to be expected, as are also anticipations of slow deliveries or requirements in excess of what proves to be the actual case as frequently occurs.

In connection with the foregoing, repairs either temporary or permanent made in lieu of replacement after special and expensive items have been secured, or ordered and in such status as to necessitate taking off the consignor's hands, result in materials being, often by reason of their character, dead stock for an indefinite period.

Careful scrutiny of requisitions before affixing signatures and investigation where thought necessary; frequent consultations with operating officers with a view toward keeping in close touch with anticipated programs and a feeling of confidence and the utmost cordiality between the storekeeper and his customers, will probably eliminate a number of sources for future worry and add to the efficiency both of the individual and the department.

In the movement of materials for any purpose and more especially when not for prospective early requirements, economy in the use of facilties is obviously an important consideration. Back hauls should be avoided and as far as possible, loading of cars to less than capacity tabooed.

On roads equipped with a general storehouse, the simpler plan is to ship to it all surplus and obsolete material, and while there is no question as to the effectiveness of this system from an individual standpoint, it is objectionable, for various reasons, in that it places a premium on indifferent storekeeping, is expensive of transportaton and disturbs the general store's stock by reason of its being impossible to anticipate the extent to which the fluctuation will affect it, and the necessity for maintaining a staple stock irrespective of such unlooked for additions. Furthermore, there is comparatively little reduction in total stock balances effected, and except for prompt weeding out purposes, it is difficult to see what may be accomplished in this manner.

In departing from indiscriminate or hap-hazard methods, the first consideration would seem to be the establishment of some tangible system of interchange between stores, and in order to accomplish this result it is obvious that a knowledge must be had by all interested, of location and amount available, and for the sake of rapid consummation it has been the practice, to some extent, to make up at each division store, periodically, an itemized list of all surplus articles, sending one copy to each of the other stores and to the general store; and from this in lieu of ordering on the general store, requisitions are made between stores and prompt action obtained.

Another plan, apparently ideal, for medium sized roads, is to so arrange requisition forms as to show in addition to amounts on hand, due and ordered, the average monthly consumption, and from these the general storekeeper issues what may be termed a general store back-order on division stores, to serve in lieu of orders on the purchasing agent.

An elaboration of the foregoing and possibly the most efficient of any, contemplates having all items printed in stock books in order to insure uniformity of order and to have a surplus stock list printed in the same order, arranged to show the amount of surplus of all items in the same order, together with the average monthly consumptions and the amount on hand, in order to give the general storekeeper an opportunity for getting a line on the situation; such stock lists to be forwarded with the requisitions or at a time specified and used by the general storekeeper in making transfers, the idea being that with the items appearing in the same rotation as on the requisitions written from the stock books, the work of location would be minimized; furthermore, the necessity for sending stock books with the requisitions would be obviated.

Semi-monthly lists of hard stock, material on hand for work deferred, and principal items of heavy character on hand, will, if furnished the general storekeeper, ofttimes result in movement, in lieu of purchases.

One thing must be an absolutely imperative requirement, viz.: Correct information given regarding the amounts on hand and due, as without this precaution no hope can be entertained of intelligently coping with the situation.

Disposition of obsolete material presents a less complicated problem and is dependent largely on decision, location and amount. By decision is meant the passing by competent operating authority on items set aside or relieved, in order that the storekeeper may take further steps toward disposition as obsolete, when so determined; this is usually the greatest drawback, largely due to an aversion to burdening operating expenses with the shrinkage, although occasionally lack of time is advanced as the reason.

H. Stevens (Nat. Ry. of Mex.) in his paper on this subject, laid particular stress on the maintenance of way department material, mentioning various materials and methods of application that gave good results. He stated that a certain type of ballast car that had the sides opening up was well adapted for handling treated ties on account of their slippery nature. A storage yard for these ties would be a valuable adjunct to the treating plants, to allow their shipment at times of least traffic. The culled ties could also be used for temporary work, thereby saving the first class ties for more important work. He mentioned the use of old rail in making yard frogs and crossings. There should be a

shop for this work, also for the repairing of switches, frogs, etc. All frogs and switches could be shipped to a shop of this kind before being scrapped, so that the usable material could be saved. In speaking of lumber he mentioned the good results being obtained by the L. S. & M. S. at Collinwood, Ohio, by the use of a resawing machine for reclaiming old lumber and timber which is cut into ties, crossing plank, bridge members, etc.

He also spoke of the importance of purchasing the highest grade of track tools obtainable, not only from a maintenance point of view but from the better results being obtained by them. All materials should be carefully tested.

In regard to emergency material he spoke of the emergency cars on the L. S. & M. S. which provide for the roadmasters on the important divisions and are so distributed along the line that with the co-operation of the operating department a broken frog or switch may be repaired in a comparatively short time. By using these cars the emergency stock of frogs and switches has been materially reduced.

Discussion.—A committee including the chief draftsman, chief car inspector, and men from the engineering department, besides the local men, was recommended for following up inactive and obsolete material. By this method the material could be better disposed of, especially those parts belonging to foreign cars, and the chief draftsman would be more particular to notify the storekeeper in advance of changes in standards. The system in vogue on the Northwest system of the Pennsylvania was also mentioned, whereby the chief clerk of the motive power department acts as the general storekeeper.

COUPLER MARKINGS.

A. H. Young (St. L. & S. F.):—We have about 40 different types of couplers on the railroads of this continent and the number is still increasing, although it is several years since the Master Car Builders' Association took up the question of designing and adopting a standard M. C. B. coupler. From an economical standpoint, the question of supplying repair parts for so many different kinds of automatic couplers should be a strong argument in favor of a single standard, and a coupler that could be used in repairing either foreign or system cars. The railway storekeepers are just as deeply interested in this matter as the master car builders or other railway officers, because it means not only less delay and less trouble in making repairs to foreign equipment, but will bring about a reduction of several thousand dollars in the amount of repair parts now necessary to be carried in stock by every railroad in this country.

We should take some action to have all coupler parts marked in such a manner that they may be quickly and correctly identified. This can no doubt be accomplished without adding any expense to the manufacturer, or much trouble to the Railway Storekeepers' or Master Car Builders' Associations, by compiling a complete list of all couplers now in use, assigning a number to each coupler with the parts classified under the proper heading and designated alphabetically; the coupler number with the alphabetical prefix to be cast in each piece by the manufacturer.

If all coupler parts were made with this identifying mark, it would enable the storekeeper or car department foreman to use the greenest and cheapest laborer on his force to handle this class of material without the assistance of experienced and higher priced workmen.

[A committee was appointed to work up a system of markings of couplers for better identification.]

SPECIFICATIONS FOR AND TESTING OF MATERIAL.

W. Davidson (Ill. Cent.):—Ordering material by specifications will help a storekeeper's stock for the reason that the company will get full value for every dollar spent; they will get what they desire made up or furnished according to their own specifications. Purchasing first class material will bring about a saving in more ways than affecting the stock of the storekeeper. It is expensive to apply inferior material to equipment, etc., at a loss of labor in removing and applying again. If a company buys material by specifications, in time it will reduce stock, as good material lasts longer and gives better results.

Specifications, when made up, should be considered from all sides so that they will not be too rigid, but should be plain, short and to the point and as near to commercial specifications as practical.

It is not necessary to make up specifications for all material, but only for such items as lumber, axles, wheels, tires, engine and staybolt iron, common, round and flat iron, brass, malleable, gray and steel castings, rubber goods, firebox, boiler and tank steel, paints, oils, frogs, switches, etc. All of the above material should be inspected at point of shipment where practical and if not, requisition should specify "To be inspected at destination."

Material not ordered by specifications should be watched by the storekeeper and the parties using it should be at liberty to criticize and complain and report any inferior articles received. This will keep a check on the engineer of tests or inspector or whomsoever the company has to inspect the material. The inspector should be required to go over the storekeeper's stock on hand with a view of catching material furnished that is inferior, which has not been ordered by specifications, or inspected at point of shipment, reporting such articles to the storekeeper, so that he can return to manufacturers. A manufacturer having a shipment or two returned will undoubtedly wake up and furnish a better grade of material on future orders.

J. S. Sheafe (engineer of tests, Illinois Central):—If for no other reason than that of appearance, the test department should be separated from the purchase and store departments. As the mechanical department uses the bulk of the stock carried, it is perhaps better for the inspection to come directly under such jurisdiction. With material purchased without specifications and with more or less indifferent inspection the loss to a company would, without doubt, be more than enough to pay for the support of a testing department. It is advisable for each road to have its own specifications and to put in, whenever possible, something which will prevent the substitution of poorer material.

On the Illinois Central a specification is blocked out and several copies are sent to the purchasing agent who submits one to each manufacturer for his criticism. It will always be found that this criticism is forthcoming and from the whole it is possible to fix the high limits of requirements to each of which two or three companies have agreed. If necessary, as sometimes happens, a revision can be made and again submitted.

On the one hand the specification should protect the companies' interests; on the other, it should not be used as a barrier to prevent the acceptance of material which is commercially good; that is, by means of a technicality to work a hardship on the manufacturer. Brevity is quite as much to be desired as any other one thing.

The testing of material is simply the following out of carefully predetermined methods, together with a little judgment or common sense. The arbitrary rejection of a large quantity of material on a technicality should be frowned upon, unless it is repeatedly evident that the manufacturer shows no disposition to improve his product. Although all chemical laboratory, and some physical laboratory, work is more or less technical, yet the constant effort should be towards practical simplicity.

Chemical laboratory results are of secondary importance, in many materials tested, to a practical performance or comparison. They are valuable more as a check or as a prophecy as to what the material will or will not accomplish in service.

As for the effect on stock of material inspection there is no reason for the store department to suffer any inconvenience in

normal times. The storekeeper desires quality in material quite as much as any other official. Credit or discredit, directly or indirectly, easily reflects upon him and his department whether or not deserved, if he distributes poor material. He has as close a working knowledge of what the material is, where it belongs and what function it is to perform, as any one except the man who directly uses it. He is as anxious to have a supply of any needed commodity as the man who wants to use it. He appreciates the loss of revenue resulting from engines and cars held up for material. Such being the case, and with close working relations, the store department will never be affected by any inspection, or rejection, of material. If necessary to accept any rejected material all the storekeeper wants is an explanation as to wherein it is too poor for use and he will do his part, and more, towards keeping it away from the railroad premises.

It has always appeared to me that the purpose of the test department should be to serve and not to dictate, to strengthen and not to tear down, and to be an asset rather than a liability. If it is modeled along these lines it is fulfilling its purpose and will render itself more and more worthy of recognition.

F. H. Hanson (L. S. & M. S.).—The purchaser who does not inspect or test material bought in the open market very often receives material that has been rejected by the purchaser who does inspect or test, or who has his material furnished to specifications.

The method of purchasing only a few brands of material, of long established excellence and reliability, is reasonably safe and invariably insures the purchase of good material; it is, however, frequently found to be expensive, for while the product may be first class, its cost is greatly in excess of that of material of less popularity but which might withstand the necessary tests admirably.

The practice of purchasing on the basis of specifications and the testing and inspecting of all material places all bidders on a fair and equal basis, and at the same time protects the manufacturer against unfair, discriminative and unwarranted complaints. He knows what is wanted and the specifications show him what will be accepted.

The tests and inspections are merely means of determining whether the material furnished is of the kind and quality ordered, or, in other words, to prove that the requirements of the specifications have been complied with.

Discussion.—Inspection should be rigid and in accordance with specifications, for otherwise poor material will be obtained, and it will not be fair to manufacturers who make first class material, as they may be under-bid by less careful manufacturers. This refers to secondary material as well as the more important.

ROLLING MILLS FOR SCRAP DOCKS.

G. G. Allen (C. M. & St. P.):—The C. M. & St. P. has, for many years, manufactured practically all of its freight cars and a large proportion of its locomotives, and one of the best methods we have found for employing the rolling mill is to select the scrap—old arch bars, rods, etc.—shear them to the proper size, and roll them for special parts that enter into the construction of this new equipment, such as brake hangers, carry irons, brake jaws, bolts, etc., that are required in very large quantities. Thousands of drift bolts for the bridge and building department are made from re-rolled iron, in fact comparatively little new iron is used for common bolts for any class of work.

The mill requires a floor space of about 25 ft. x 32 ft. This allows space for storing billets as well as the rolled iron. The mill proper, which rests on a concrete foundation, is composed of two cast iron housings, set on rails similar to the rails of a motor, allowing of the adjustment of housings to accommodate different lengths of rolls. The housings are designed with rectangular openings which allow of fastening the bearings in which the rolls revolve. The bottom roll, being connected to the driving shaft, is fitted with a gear wheel which meshes with a gear on the top roll. These gears vary in diameter as the rolls vary. The rolls are made of cast iron, designed with ends grooved to act as key seats, and connected to the driving shaft. Different rolls are used in order to accommodate the different kinds of iron. The machine is belt driven, operating at the rate of 135 r. p. m., and is driven from a line shaft in connection with four 100-lb. cushion hammers and a 4-in. forging machine, by a 29½ h. p. motor. The mill requires 50 to 60 amperes running loaded and 20 to 30 amperes running light. A current of 220 volts is used.

The straightening table is a cast iron block, 5 in. thick, 3 ft. wide and 8 ft. long, and is located directly in front of the mill. The furnace is of brick work and cast iron plates, securely bolted together, and occupies a space at the side of the mill 17 ft. 7 in. by 6 ft. It is arranged with one firing door and three material floors, Youghiogheny coal is used for fuel.

The initial cost of installation which includes patterns and experimental work, is as follows:

Rolling mill	$939
Furnace	450
Motor	669
Total	$2,058

Following is operating expense per nine hour day:

Roller, 33⅓ cents per hour	$3.01⅓
Heater, 33⅓ cents per hour	3.01⅓
Catcher, 24 cents per hour	2.16
Straightener, 24 cents per hour	2.16
Common labor, about	2.00
Fuel, power, etc.	6.00
Total	$18.35

The billets used are from 12 to 24 in. long and the output of the machine varies from 3 to 6 tons per day, depending on the size of the material rolled. Various tests made from time to time, have demonstrated the fact that the re-rolled iron is of good quality and usually superior to the ordinary grades of new iron, the improvement being due to the additional rolling. Naturally, however, the quality of the re-rolled iron must depend to a considerable extent on the material of which the original bar is composed and can be determined only by a test of each piece, which would be impracticable. This element of uncertainty therefore, as a rule, precludes the use of the product of the mill for the more important work, the exceptions being instances where the material in the billets is known to be good. The cost of rerolling, not including value of scrap, is from $3 to $6 per ton, according to the size of iron rolled, and the profits will average $10 per ton.

A recent statement from the general storekeeper of the Illinois Central is to the effect that the present average daily output of their rolling mill is 3½ tons, cost for labor and fuel $4 to $4.75 per ton, and profits $700 to $900 per month.

The Chicago & North Western is also operating a mill of the C. M. & St. P. type at their Chicago shops, reducing 1¼ in. and 1⅛ in. round to ⅞ in. and ¾ in. The daily output is 1½ tons and costs about $8 per ton. In addition to this they have ordered an Ajax three-roll-mill which will have a capacity of from 2 in. to ⅝ in. It is the intention to operate both mills.

The Chesapeake & Ohio has an Ajax reclaiming roll on its scrap dock at Huntington, W. Va. This has been in operation about five months, rolling flats up to 1 by 3 in., and rounds and squares up to 2 in., turning out finished bars as long as 13 ft. 6 in. Total cost of rolls, furnaces, oil tanks, shed, motor, etc., in the neighborhood of $12,000. Average daily output 3½ tons, on which it is stated they are making a profit of $1,100 a month.

The Southern Pacific is operating a rolling mill on the scrap dock at its Sacramento general shops, with a maximum output of 190 tons and an average output of 90 tons a day. Total cost per ton, including scrap, $28.60—total profits per year, $56,000. This, however, would hardly be considered a rerolling mill proposition such as I have attempted to cover, but a general rolling mill, and I have no doubt that further information can be obtained that will be of great interest, especially to roads located at considerable distance from the base of supplies.

As the difference between the market price of new iron and

the market price of scrap is not always maintained at the same level, the profits per ton from the operation of rerolling mills must necessarily vary. The greater this difference, the greater the profit, but with sufficient tonnage to keep a mill steadily employed and manned by a regular crew, the profits from such a mill as I have described, having a capacity of from 3 to 6 tons per day, should not, at any time, be less than $10 per ton.

Discussion.—The discussion led to the general subject of scrap. The Rock Island handles scrap with magnets on locomotive cranes at less than two cents per ton, as against twenty-five to thirty-five cents by hand. The Southern Pacific reclaimed $960,000 worth of scrap last year at about one-half the cost of new material.

STORAGE AND HANDLING OF ICE.

Three papers were presented on this subject, abstracts of which follow:

G. T. Dunn:—Storage for ice should be such that it will accommodate the supply for all departments at any one point for the entire season. Experience has taught us that the larger the volume the less shrinkage will be. Ice can be handled more advantageously if packed on its edge than if packed on its side. When stored on its edge it is necessary as each layer is placed in the house to adze off the cakes to obtain a uniform surface on which to place the second layer and so on. All crevices or cracks in ice so packed must be completely filled with snow when possible to obtain it or ice broken up fine. After the house is once filled, a covering of shavings, saw dust or hay, preferably shavings of about from twelve to eighteen inches, should be placed over the top.

Ice stored for use in icing refrigerators should, from an economical standpoint, be stored on its side in that it is broken up more or less when used for this purpose, and that less loss will be had through shrinkage.

We store our ice on a piece-work basis, and by so doing make a saving of from three to five cents a ton. The following are figures covering the storing of ice for the past three years:

1911.....	1,436.25 tons	Cost per ton.....	$.239
1912.....	1,415.9 tons	Cost per ton.....	.266
1913.....	1,520.6 tons	Cost per ton.....	.251

These figures represent all expenditures such as the cleaning of the house, boarding up of the doors, covering over of the ice and removal, installation of hoisting engine, etc.

Clarence Foster (C. & A.):—The most important consideration for the preservation of ice is the proper construction of a house which will minimize the shrinkage. After the ice is in the house all doors should be sealed and the embankments around the foundations should be gone over to see that no air can get into the chambers from below. A slight opening for air underneath can cause havoc in the way of shrinkage. No separate chamber should be opened until necessary for the removal of the ice. It is necessary to have a little larger air space between the rows when storing artificial ice and we have even found it advisable to put thin boards between the layers. If care is not taken in the storage of artificial ice it will congeal and in some cases dynamite will be necessary in its removal.

We find at Roodhouse, where the re-icing is all done by hand, except the crushing, that one and one-half to two minutes is the average time needed per car. The ice is handled with crews of twelve to fourteen men. On the Chicago & Alton we add to the first cost of the ice in the house 30 to 33 1/3 per cent. to cover shrinkage, which leaves but a small amount for adjustment at inventory time.

The Roodhouse station is handled in the nature of an outside operation. Ice, salt, labor and incidentals are debited to a ledger account in the general storekeeper's office the same as material at a division or terminal store. Charges to departments for ice furnished, and bills rendered versus shippers are credited. Any profit or loss accruing from the operation of the station is cleared monthly through operating expenses.

D. C. Curtis (C. B. & Q.):—Ice 22 in. square is the best size to pack and handle. A competent inspector should be at the loading point or field to see that the ice is furnished in accordance with the specifications. An inspection at the loading point saves paying for hauling and handling ice not suitable for packing, and there is also an added saving in the shrinkage caused by packing irregular ice.

A large loss of ice is caused by the methods used in taking it out of the house. It should be so handled that the cakes taken out will be the same size as the cakes packed. The care ice houses receive, is the determining factor as to what the shrinkage will be. In insulated houses, openings between the sill and foundation will cause an enormous shrinkage and in some houses this has caused the ice to melt for a distance of 6 ft. from the wall the entire height. Insulated houses should have no openings to the outside air, and should be as near air tight as it is possible to make them.

Ice packed in sawdust should be gone over at least twice a week to see that all cracks and openings are closed. Sawdust on top of ice will crack in ten days, so that 20 per cent. of the top surface of the ice will be exposed and this soon causes holes, and a very large shrinkage. Hay is a better covering for ice than sawdust, as it will not crack or form openings and expose the ice to the air. The space between the ice and roof of covered ice should be as large as possible, and so arranged as to have perfect ventilation, to remove the hot air caused by the sun's direct rays on the roof.

The cost of construction and insulation of ice houses that will pay for the interest on the investment can be closely figured and is a matter that should receive very much more attention than it has in the past. The accompanying table is based on observation and shows that shrinkage pays for the cost of insulation where ice is worth over 80 cents a ton in the houses:

House No. 1 is a house having several thicknesses of good insulating material such as lith cork board, water proof paper, sawdust, etc.

House No. 2 is a house with $1.00 less per ton of storage room spent for insulation.

House No. 3 is simply a shell to hold the sawdust or hay packed around the ice.

	House No. 1.	House No. 2.	House No. 3.
Cost of construction per ton of storage room.....	$4.00	$3.00	$1.50
Per cent. shrinkage.....	10	25	40
Additional cost for additional capacity to provide for shrinkage	.00	.45	.45
	$4.00	$3.45	$1.95
Interest at 6 per cent.....	$ .24	$ .207	$ .117
Depreciation 4 per cent.....	.16	.138	.078
Insurance, taxes, repairs, etc., 4 per cent.....	.16	.138	.078
Total cost per year of investment.....	$ .56	$ .483	$ .273

To provide for the loss by shrinkage using house No. 1 as the basis, ice in the different houses costs:

	House No. 1.	House No. 2.	House No. 3.
At 50 cents per ton.....	$ .50	$ .575	$ .65
At 80 cents per ton.....	.80	.92	1.04
At $1.20 per ton.....	1.20	1.38	1.56

The amount of money lost per ton each year by shrinkage using house No. 1 as a basis, would be:

	House No. 1.	House No. 2.	House No. 3.
At 50 cents per ton.....	$ .00	$ .075	$ .15
At 80 cents per ton.....	.00	.12	.24
At $1.20 per ton.....	.00	.18	.36

From the above table it will be seen that the difference between the additional cost of investment for construction of house No. 1 and the amount of money lost by shrinkage of ice in houses No. 2 and No. 3 will be as follows:

	House No. 1.	House No. 2.	House No. 3.
Ice at 50 cents per ton—			
Cost of investment.....	.....	$ .077	$ .287
Loss by shrinkage.....	.....	.075	.15
Ice at 80 cents per ton—			
Cost of investment.....	.....	.077	.287
Loss by shrinkage.....	.....	.12	.24
Ice at $1.20 per ton—			
Cost of investment.....	.....	.077	.287
Loss by shrinkage.....	.....	.18	.36

It will be seen that when ice costs 80 cents per ton in the house, it would only cost 7.7 cents more to build house No. 1 than house No. 2, and the saving in the amount of money lost by shrinkage would be 12 cents, or it would save 4.3 cents on every ton, and the insulated house No. 1 should be built. When ice costs over 80 cents per ton in the house, it pays to build a well insulated house.

However, the question as to how early in the season the ice will be used, should be taken into consideration. In houses of more than one room it would pay to construct one of the rooms cheaper than the others, and use the ice out of this room first, before the real warm weather begins and heavy insulation is necessary.

It is poor policy to build a house of over 1,500 tons capacity that will require packing the ice in sawdust or hay, as it is expensive to buy the packing and waste it all in 2 or 3 years, to say nothing of the labor involved in the packing and handling. Where ice is cheap it is not necessary to build an expensive insulated house, but the ceiling should have as much, or more, insulation as the walls. The rooms should be as near air tight as it is possible to make them, and the ice should be hoisted by a skip hoist through an opening in the ceiling and then lowered by counterbalance elevator or gravity chute to a cooling room, and used from this cooling room as desired.

The service buildings for taking care of ice for passenger car use are the largest producers of shrinkage on a railroad. A service building should be well insulated and have a small vestibule equipped with a bench properly arranged for washing, draining the water off, and cracking the ice in a bin where the ice can be easily shoveled out. All this should be sanitary and so arranged that it is not necessary to touch the ice with the hands. This vestibule should be large enough to hold the necessary ice carts and receptacles which are needed in connection with this service. In icing passenger cars at the last division before reaching terminals, only enough ice should be put in the coolers to run the car to its destination, with, of course, enough extra to take care of the average delay.

There is a big loss of ice in refrigerator and cream cars by not keeping them in continuous service. In loading refrigerator cars in the winter time, a canvas curtain is used over the door to prevent the cold air getting in. This curtain is used at but very few points in the summer time to keep cold in. Instructions should be issued to all freight agents to use the canvas curtain whenever it is necessary to keep the door open. The use of these curtains will prevent a big waste of ice.

It is true the first cost, or cost f. o. b. car, is small, but added to this the cost of hauling, cost of packing, interest, depreciation, and taxes, etc., on the building in which it is stored, brings the cost up to where it is too expensive to allow ice to melt where it can be prevented. When the stored supply is exhausted in the hot summer months, the purchase price of ice is then $1.50 to $3.50 per ton, and this is the value of the ice which has been allowed to melt. Each year it costs thousands of dollars above the winter market price for the ice which it is necessary to purchase in summer. On a railroad of 5,000 miles or more, I daresay the waste in ice amounts to from $50,000 to $100,000 per year.

Discussion.—Mr. Roth of the Burlington claimed that his road saved $50,000 by putting the handling of ice in the hands of the storekeeper.

OIL HOUSE AND WASTE STORAGE.

C. S. Coe (A. T. & S. F.):—The Santa Fe has discarded the old time oil house, maintained separate from the storehouse, which necessitated two extra employees, one for the day and night, and instead a reinforced concrete basement has been adopted of sufficient size, according to the importance of the division point, to handle the illuminating and lubricating oils, varnishes, japan, greases, compounds and everything required in this class of material. This oil basement is situated as far from the storehouse as is desired, the oil being drawn by the Bowser system of long distance pumps situated in one end of the storehouse. This places the issuing of oils with the store department employees the same as other materials and eliminates the employing of special oil house men.

One of our most essential features is the handling of oil from the general oil house to the division oil houses. To accomplish this successfully, about forty-five 10,500 gal. capacity system tank cars are especially assigned to the store department for service at the general oil house. All oils ordered from the oil companies are consigned to the general oil house and transferred to these assigned system tank cars, thus saving per diem or demurrage charges. We have adopted colors for the different kinds of oils so that all employees will know at a glance what kind of oil is in a can, drum or any oil container, and will also recognize it as company material and handle accordingly. The assigned tank cars are also painted with a 24-in. stripe around each end of the tank in accordance with the above, and are stenciled for the kind of oil they are used for, boarded for store department service, and never used for any other kind of oil unless released by our department. All hose, pipes, valves, connections and other fittings are also painted according to colors, and there is no chance of getting oils mixed in taking the supply.

These tank cars on leaving the general oil house under load are routed over the line, making from five to ten points, according to the distance and the amount of oil required; they are then returned to the general oil house, reloaded, and again routed out for another trip, and are routed so each tank makes a trip about every thirty days; we have enough tanks to cover the entire road in this period.

The general oil house is a one-story concrete building having a basement, 50 ft. wide by 160 ft. in length. The storage capacity for illuminating and lubricating oils is about 125,000 gal. and consists of a series of 10,000 gal. tanks. The storage for turpentine, varnish, japan, paints, linseed oil and similar materials consists of a battery of tanks erected in such a way that by the use of an air hoist and carrier, barrels can be raised to a track and run by gravity to any desired tank and emptied. The material is then drawn for shop use or shipment by the long distance, automatic measuring, Bowser pump system. A sufficient space is partitioned off by a steel door where the heavy paste and compounds are kept in open stock for retail purposes.

On the main floor are located 32 self-measuring Bowser pumps. Steel counters are used for wastes and journal packing, while standard steel shelving is used for can paints and similar material. One side of this floor is used for storing of waste in bales and will be partitioned off with a fine screen wire to protect it from pieces of oily waste or anything which might cause fire.

Eleven power pumps are installed for the transferring, unloading and loading of tanks and supply cars, and for filling of drums and barrels for road shipments. These pumps have a capacity of from 8,000 to 10,000 gal. each per hour, and the maximum quantity of oil that can be transferred in a day is almost unlimited.

Indicating gages, in appearance similar to a steam or air gage, register the amount of oil in the storage tanks in the basement at all times, and can be placed anywhere in the building, on the wall, or in the office, and show at a glance just what oil is on hand, thus saving the necessity of going to the basement to take measurements.

Discussion.—The Illinois Steel Company saved $8,000 by adopting the centralized oil house at their plant.

EFFECT OF STORES DEPARTMENT ON OPERATING COST.

H. C. Pearce (So. Pac.):—A well-organized stores department on a railroad has the same direct effect and influence that a skillful and economical housewife has on the economical operation of the household.

How to measure the value of a well-organized, efficient and economical supply department in dollars and cents is as im-

possible as it is to measure the value of an efficient, capable and economical administration of household affairs. The work is so far-reaching and so interwoven with all departments that it is impossible to segregate the unit of saving into dollars and cents, but its need and usefulness are so apparent and its field is so well defined that it is fundamental. The real value of a well-organized and efficient supply department can only be determined by the final results of the operation of the property. Its service should be measured from day to day. The condition of the property under its control shows for itself. The investment is indicated by the balance sheet. The real economy which is effected will be best shown by the percentage of *purchases* to the *issues* over a period, with knowledge of conditions.

I appreciate that it will be said that this is not an accurate unit of measure for the reason that some roads manufacture more than others, etc. This is true, but it will not affect comparisons on the same railroad and statistics have little value other than for comparative purposes and with full knowledge of conditions.

The supply department should be organized and operated to *reduce* purchases and not to *increase* them. The unit of price, unless service and need are considered, is a false one. The real unit is making the most of what you have and making everything give its full measure of usefulness and so handling and disposing of the salvage as to obtain every dollar there is in it, the ultimate purpose of it all being the *net* cost of materials and not the *first* cost. The economical housewife does all these things and in addition, which is probably more important than anything else, by precept and example lays the foundation for a self-respecting, self-supporting and capable family. This is what an efficient supply organization should and will do for a railroad.

It is to this department that we must look for savings in values, which are otherwise generally overlooked. The dollar is watched, checked and supervised. The same value in material hardly receives a thought. Our railroads must look to their supply departments to protect their materials to the same extent that it now looks to its accounting and treasury departments for the protection of its dollars.

The first purpose of a supply department is to supply the needs of the railroad. It must be organized in such a way that what is best suited for the purpose can be laid down promptly at the time it is needed at the least cost. The saving made by having an organization of this character can never be shown by statistics. It is represented only in the cost of the work.

Its second purpose is to market the salvage. With railroads having their own foundries and rolling mills, the railroad itself is its best customer and salvage should be handled in such a way as to apply it to the requirements of the railroad to the best advantage.

I will not attempt to go into detail as to how the salvage on our railroads should be handled, controlled and marketed. This matter was presented at last year's convention and in an article appearing in the *Railway Age Gazette,* issue of December 13, 1912. I wish to simply point out the one fact that the use and marketing of salvage is of second importance only to the providing and caring for the company's property.

The third purpose of a supply department is to handle its material with the least expense, always taking into consideration the first two principles, i. e., that it is necessary to provide and properly care for what you have.

The fourth purpose is to prevent deterioration and reduce interest on investment, deterioration for want of proper care and housing facilities, system, etc., changes in standards, changes in plans, curtailment of forces, lack of proper facilities and lack of proper care. The losses here are enormous. Very few railroads appreciate the enormous amount of money that is being lost annually in this way. An efficient organization should be such as to have perfect control and knowledge of every item on hand and on order and the organization should be so conducted as to reduce losses by deterioration, changes in plans, changes in equipment, etc., to the lowest possible basis. Interest on the investment is a big item and one which should be fully considered by any well-organized department, but this is one of the items which are exposed and the management can easily watch and protect this item, and, further, if the other purposes I have mentioned are taken care of, this item will take care of itself.

I have purposely avoided going into statistical details. My purpose has been to simply present certain fundamentals underlying the organization and the results that such an organization would have on the net revenue of a railroad company.

N. M. Rice (A. T. & S. F.):—The effect of a well-organized store department on the operating cost of a railroad, is far-reaching. In their organization the Santa Fe purchasing and stores departments are somewhat different from those of other railroads, in that the head of each reports to the same vice-president and while to a certain extent each is a separate department in itself, yet at the same time the two departments work in accord; consequently the assistance given by either department to the other brings advantageous results not obtainable otherwise.

Primarily, purchases made of railroad material and supplies, governed by quality and controlled by competitive bids, as well as those items bought under contract, assist very materially in laying the foundation of an economic effect on the operating cost; however, should the effort stop here the surplus and consequent waste thereafter to be encountered would destroy entirely the results thus far obtained.

It is well known that a railroad operating under most favorable circumstances, in so far as management is concerned, will suffer, from a monetary standpoint, from gross errors made in over-estimates of material required in construction of renewals. Then again there is an expensive outlay to meet the demands of new conditions. To reduce the expensive effect of conditions such as these, the store department must keep in touch with the situation and handle through its channels, the surplus and out of date material, giving credit to operating accounts, and then by application, by substitution, wherever possible, prevent expenditures, proved unnecessary by the acceptance of the substitute. The sources from which reclaims can be made are numerous and embrace items ranging from large and expensive bridge timbers left on the right of way at some bridge to serviceable second-hand track spikes found in the scrap yard, and which when returned to the stock of the store department and the proper operating account receives credit therefor has its effect on reducing operating expenses.

In a great many cases even where full care and caution are used by the heads of the different branches of the operating or constructing department, in figuring estimates and in placing requisitions for material required for some specific work, changes made after the material is on the ground and charged to that particular work, will oftentimes result in several dollars' worth of material being left unused, which if not taken up and turned back to store stock for credit and used elsewhere, will necessarily stand charged to the work for which it was originally ordered, and even though at that particular time it is the intention, at some future date, to use this material in connection with similar work at some other point, the probabilities are when that time arrives, if ever, it will be found that deterioration will prevent, thus necessitating another supply of material and its consequent additional charge. Conditions, however, on the Santa Fe, under which the store department endeavors to make its system effective, practically demand the prompt return of this material to its jurisdiction, and there have been years when the value of material returned to stock, on the entire Santa Fe system, amounted to over $2,250,000, or approximately 6 per cent. of the issues. In these figures, however, are included approximately $420,000 worth of serviceable material reclaimed from scrap.

The mechanical working stock at terminals and shops embraces exactly the same features as the line stock, only it is conducted

on a larger scale and carries with it the additional advantage of being located in close proximity to the work for which it is required, thus dispensing with the necessity of mechanical department employees making long trips for material and thus securing their greater application to the work. This principle of handling is in universal practice on practically each and every item of material, the objective point being to prevent charges for material until actually required.

With the practice of issuing supplies and stationery from supply cars, which run monthly, the requisitions are made for thirty day needs only, instead of considering it necessary to carry on hand an extra 30 or 60 day stock for emergency, thus reducing charges to this class of operation, monthly, to a minimum.

One of the many economic effects on operation can be procured in systematizing the storing and distributing of oil. In the first place the cost of the oil is placed at the minimum, when proper storage has been provided therefor, by purchasing for delivery in tank cars. The use of steel tanks for storage and self registering pumps for delivery eliminates the inevitable attendant loss, not including increase in purchase price, when bought in barrels and issued therefrom through faucets. Practical tests by competent engineers show losses, in the barrel and faucet method of handling, of from 5 to 25 per cent. on lubricating oils and on volatile oils the loss is much greater.

Another source from which the store department can always draw means with which to affect operation is the scrap yard. Each and every ton of scrap picked up on the right of way or at terminals and sent in to the central scrap yard is just that much reduction in charges to operating accounts, and the more care and diligence that are employed in sorting the scrap and in the reclaiming of serviceable material, just that much more benefit will accrue. Brass, of course, is the one item of scrap, which on account of its value, stands out clear and distinct as requiring more care, more diligence in following up, than any other single item. Monthly comparisons of receipts of scrap brass with purchases of new, as well as care in safe storing are essentials, which, if overlooked, play havoc with returns in this class of scrap. When one takes into consideration that the cost of new brass on the Santa Fe System for one year is between $700,000 and $750,000, while the value of scrap brass sold is approximately $500,000, it is needless for me to add anything further to prove the effect on operation by this one item of scrap alone.

Reclamation and utilization of serviceable material taken from scrap has each year broadened and expanded until now practically no item which can be utilized to an advantage is placed on the market for sale. As mentioned heretofore, the value of serviceable material reclaimed from scrap approximates $420,000 yearly, while the sale of scrap, restricted somewhat on account of unsatisfactory market prices, has averaged for the past two years $1,250,000.

An arrangement is in effect on the Santa Fe whereby the store department periodically makes a check of way car equipment, and even though requisitions for this class of supplies are approved by trainmasters and superintendents, it is amazing in how short a time a surplus will accumulate. Just a short while ago a check of 32 cars resulted in the return to stock of $2,291.94 worth of supplies not required, an average of $71.62 per car. The return to stock of these items, of course, affects the operating cost of a railroad.

Fuel is the most expensive single item for which railroads pay and the one single item which can be made the greatest factor in handsome returns to operation. We have on the Santa Fe organized a branch of the store department, which gives its entire attention to this pursuit. If information procured on methods in use on other railroads in connection with handling fuel is correct, the system under which we are operating is decidedly more far-reaching than any other in existence.

It was not until June, 1908, that the store department assumed entire control of fuel handling. It is therefore necessary to use the twelve months following that date as a basis of comparison for the three fiscal years ending since June, 1909. While the decrease per ton mile since that time is fairly good, yet as this was the initial year in our eefforts to reduce consumption, in view of the success secured since, it is apparent that the decrease over periods prior to June, 1908, for the years following 1909 is really greater than actually appears. The following is the result of the comparison of the fiscal year 1912, years 1910 and 1911 being not so good, but still a considerable decrease under 1909.

Ton miles	29 per cent. increase
Fuel consumed	16.2 per cent. increase
Fuel consumption per ton mile	9.7 per cent. decrease

Or in other words, the efficiency of a ton of coal was raised 9.7 per cent., which, when applied to a $9,500,000 yearly fuel bill, shows the effect on operation in no uncertain terms.

In the face of this decrease, for the first eight months of the fiscal year 1913, due to more rigid supervision, there is a further reduction over the same months of 1912 of $421,438.83. These figures take into consideration increase in purchase price of fuel and are based on the increased efficiency this year over last of a ton of fuel as compared with the increased cost to operation, had the efficiency of the fuel remained stationary or decreased.

Discussion.—G. G. Yeomans presented some interesting figures taken from an article published by him in the *Railway Age Gazette* of July 19, 1912, showing the savings made by establishing a stores department on a road where there was none before. The average reduction in operating expenses and purchases for five years after the store department had been in force was $1,359,000 and $774,000, respectively. The average increase in car mileage density, the best unit by which to measure material for a road for the five years, was 16.4 per cent., showing that the road was using more material. This road was no exception to other roads without a store department. N. M. Rice explained the system of handling fuel on the Santa Fe.

STORE HOUSE CASTING PLATFORMS.

D. Kavanagh (C. R. I. & P.):—It is desirable that the casting platform should be at the car floor height. In case it is not practical to have it thus, there should at least be a small platform for loading and unloading cars, reached by a platform hoist. The platform should be so arranged that sufficient space is allowed to pile castings of different pattern numbers separately. Each kind of casting should be placed together and in numerical order of pattern numbers as far as possible; that is, all grates, piston heads, draw castings, steam pipes, etc., should be grouped separately, as this arrangement makes a neater looking casting platform and also is more economical in putting away castings or getting them out for shipment, and is in my estimation a better plan than attempting to group various castings together for any certain class of locomotives, as in the latter instance if you have two or three classes of engines that take the same pattern of piston head, you have two or three patterns of castings in as many different places on the platform.

There should be a suitable storage shed to accommodate finished castings. This shed should be provided with the necessary racks to accommodate such material as cylinder packing rings, vibrating cups, etc., and the larger finished castings, such as crossheads, piston heads, cylinder heads, etc., should be kept on the floor suitably arranged for convenient handling. The office of the casting platform foreman, or stockman, could be located in this building. The finished casting house should be heated, as this class of material deteriorates not alone in the open air, but also in the natural moisture of an unheated building.

At points where the volume of material handled will warrant the expenditure, a crane operated by steam or electricity—a locomotive hoist or traveling crane of some kind—should be used. At smaller points an air hoist may be built at a comparatively small cost and will answer the purpose reasonably well. In all cases in considering the question of crane facilities, the cost of machinery must be taken into consideration in connection with

the benefits to be derived from such improvements. It is important that the foreman or stockman in charge of the casting stock keep himself posted on all new power that is being built or purchased requiring a new pattern of casting, as well as to keep himself advised of castings that are becoming obsolete on account of changes in standards or on account of some particular type of locomotive going out of service.

LUMBER SHEDS.

W. E. Hatter presented a paper on this subject, recommending a building having a space of 2½ in. left between the siding boards, they being placed at such an angle as to prevent snow or rain from beating through. The building should be adequately lighted, or otherwise the material will season slowly and become susceptible to dry rot, mildew, etc.

All kiln dried material should be stored in a special room in which the conditions produced by the kiln will be retained. The room should be tight but ventilated and maintained at an even temperature.

Following is an itemized list and approximate cost of material needed for the construction of such a shed, having a capacity of one million feet of lumber.

Roofing paper	$ 536.54
Slate roofing	1,054.14
Glass	89.90
Oak floor for piling lumber	1,164.37
Oak floor between tracks	379.67
30,811 ft. 1 in. siding pine	687.70
37,750 ft. underlining for state at $32.00—white pine.	888.00
6,900 ft. flg. in dry shed at $27.00	186.30
Cement floor	200.00
Rafters, joists, beams, etc	1,000.00
Total	$6,986.62

STANDARD SUPPLY CAR.

Two papers were presented on this subject, abstracts of which follow:

D. D. Cain (So. Pac.):—The supply car, when properly handled, is one of the greatest savers of material and money of any branch of the supply department. The real purpose of the supply car is to deliver material where it is wanted at a specified time each month, and at the same time pick up all tools and other material not needed and make a monthly clean-up of all scrap on the division.

The standard for supply cars should be in the standard of operating cars rather than in the standard car. To properly handle material with supply cars, the following will be needed on each division or district:

First—An oil car with the required number of tanks for oil. This car should be equipped with hand pumps and with an air pressure arrangement, the air to be used wherever it is necessary to draw any large quantity of oil, and at the same time the hand pump can be used for filling smaller orders. The air is taken from the train pipe line through a reducing valve.

Second—A general car equipped with the necessary shelves for small miscellaneous material and supplies for all departments. This car should be arranged with space for sleeping accommodations for the attendants and a desk at which to transact the clerical business necessary.

Third—A car with the necessary racks for roadway tools, block signal supplies, large station supplies, and similar material.

Fourth—A car for case oils, gasoline, etc., where used.

Fifth—A car for stationery if it is delivered by supply cars.

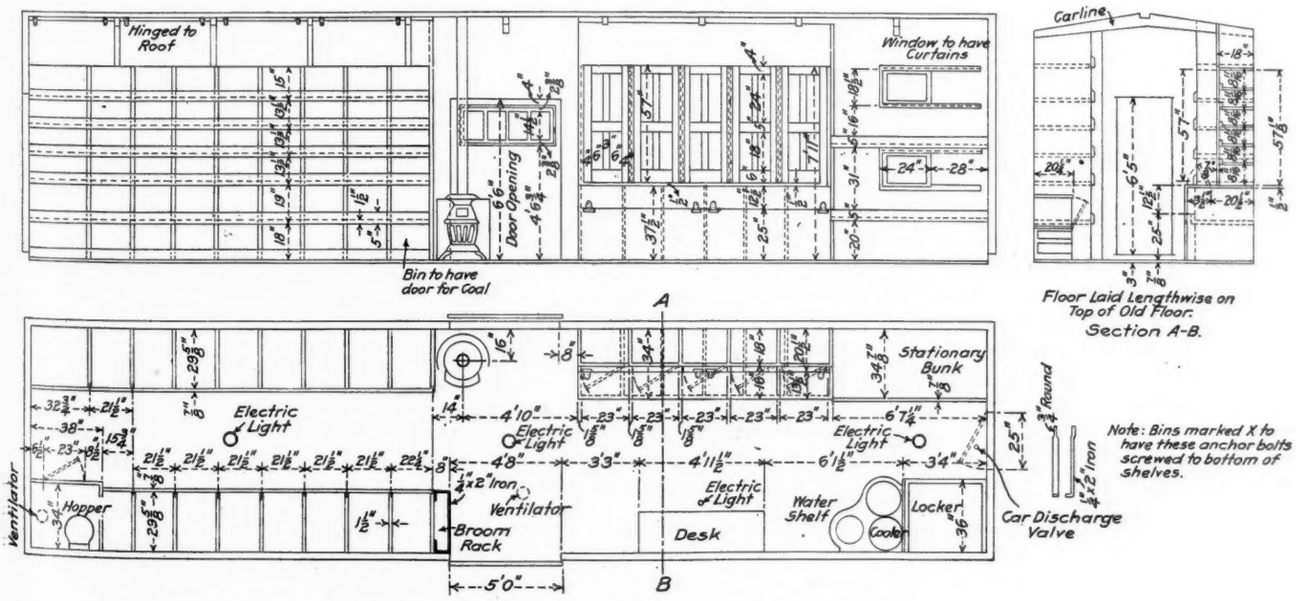
Sixth—A car for spikes, track bolts, and track supplies.

To the above should be added the necessary cars for assembled jobs complete, also hand cars, velocipedes, frogs, switches, track trimmings, etc., and, where treating plants are operated, lime, soda ash and distillate, and such flat cars as may be needed with side boards for scrap.

The first five cars should be equipped with end doors to enable the attendants to pass from one car to another while the train is in motion for the purpose of assembling material for the next stop. These cars should also be equipped with electric lights, which can be installed at a cost of $35 per car. We use a set of the same batteries that operate our block signals. In practically all of our supply trains on eight divisions we use from twelve to as high as thirty cars, depending on the amount of business each month.

With a properly organized division and the supply cars in charge of a thoroughly competent division storekeeper, there is no need for requisitions being delayed by having the approval of every officer on the division. These cars are built for action, and we are going to deliver what is needed and pick up everything that is not needed. Requisitions covering the estimated requirements for the ensuing thirty days are made by all departments and sent direct to the division storekeeper. These requisitions are stamped, "Supply Car," and turned over to the supply car storekeeper and assistant, who draw off a summary of the material required and check it with the various section storekeepers. Any items short are immediately reported to the storekeeper, and, if considered necessary, the proper steps are taken to secure them.

It should be understood that supply cars must be sent out equipped with all needed supplies. If they are not, it means extra packing, billing, and shipping by local trains and there is nothing so detrimental to the operation of the supply car as



Standard General Supply Car—Southern Pacific.

being out of handles, track tools, or any supplies required.

The making out and forwarding of the requisitions and the checking and loading of the cars must be handled with despatch, and the supply train, loaded with full equipment of tools and all miscellaneous supplies for all departments, including frogs, switches, track bolts, spikes, and extra hand, velocipede and push cars and assembled jobs, is now ready to leave.

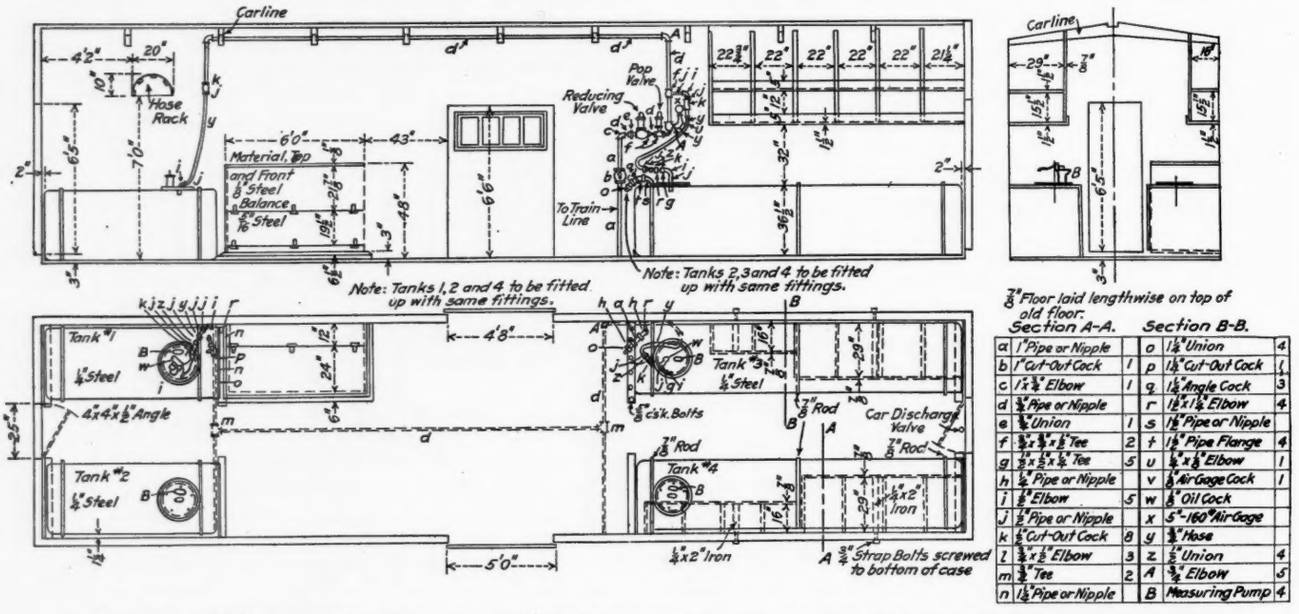
Schedules showing the dates on which these cars move, train numbers, etc., are prepared in advance and placed in the hands of division engineers, roadmasters, section foremen, agents, signal maintainers, pumpers, trainmasters, yardmasters, etc., so that all tools, scrap, etc., may be ready for quick inspection and handling.

The supply car must always be accompanied by the division storekeeper and by the roadmaster and signal supervisor over their own respective districts in order to be properly handled and to get the best results. Stops must be made at each tool house and station. Tools and supplies required are checked between stations and made ready for quick delivery.

The receivers of the material, i. e., signal maintainers, section foremen, agents, etc., receipt on the face of the requisition for the supplies delivered by the supply car storekeeper and the supply car storekeeper in turn receipts on the face of the shipping inspected by all the above men and any necessary business is transacted on the ground with the agents and section foremen personally. Tools are inspected and, if any surplus tools or materials are found, they are turned over to the supply train and the proper credit allowed. It may be that the tools on hand are badly worn and none were ordered, but no red tape is allowed to stand in the way and the necessary tools and supplies are issued, a memorandum requisition being made for charge. Then no excuse can be given the superintendent that sufficient material or tools were not on hand to do efficient work for the next thirty days. The turning in of old tools is rigidly enforced. Even the return of old brooms and similar material is required for the moral effect.

Scrap is taken from the bins and placed on the proper cars, the sorting being done at the time of loading, which costs no more as the bins at the tool houses are arranged as to wrought, cast, etc. This saves considerable labor at the general scrap docks.

The superintendent and other officers by this method of inspection become thoroughly acquainted with conditions at each point and the need for all material on the division, knowledge which they could not obtain by any other inspection. The division storekeeper becomes a very valuable assistant to the


Carline
Hose Rack
Material, Top and Front ⅜" Steel Balance ⅛" Steel
Pop Valve
Reducing Valve
To Train Line
Note: Tanks 1, 2 and 4 to be fitted up with same fittings.
Note: Tanks 2, 3 and 4 to be fitted up with same fittings.
Tank #1 ¼" Steel
Tank #2 ¼" Steel
Tank #3 ¼" Steel
Tank #4 ¼" Steel
4"x4"x½" Angle
⅞" Rod
Car Discharge Valve
¼"x2" Iron
Strap Bolts screwed to bottom of case
5'0"
⅞" Floor laid lengthwise on top of old floor.

Section A-A. Section B-B.

a	1" Pipe or Nipple		o	1½" Union	4
b	1" Cut-Out Cock	1	p	1½" Cut-Out Cock	1
c	1"x¾" Elbow	1	q	1½" Angle Cock	3
d	¾" Pipe or Nipple		r	1½"x1¼" Elbow	4
e	¾" Union	1	s	1½" Pipe or Nipple	
f	¾"x¾"x½" Tee	2	t	1½" Pipe Flange	4
g	¾"x¾"x¾" Tee	5	u	¼"x⅜" Elbow	1
h	½" Pipe or Nipple		v	⅜" Air Gage Cock	1
i	½" Elbow	5	w	⅜" Oil Cock	
j	½" Pipe or Nipple		x	5"-160# Air Gage	
k	½" Cut-Out Cock	8	y	¾" Hose	
l	¾"x½" Elbow	3	z	¾" Union	4
m	¾" Tee	2	A	¾" Elbow	5
n	1½" Pipe or Nipple		B	Measuring Pump	4

Floor Plan of Oil Supply Car Showing Air Unloading Arrangement and Racks Above Tanks; Southern Pacific.

notice for all serviceable material, tools, scrap, etc., turned over to him. Thus the bookkeeping operations are reduced to a minimum and are completed on the ground with the user and deliverer of the material together at the time. This in itself performs a very useful detail in connection with the operations.

When supply cars were first introduced on the Southern Pacific we ran them in local trains, but we found that the proper time could not be given unloading and picking up without seriously delaying the train. Consequently about every three months we ran a clean-up special. The superintendents found that our supply trains were not playthings and that they actually delivered the material required for thirty days, with the result that they combined their own trips with ours. Thus, on practically all divisions we now have our supply trains run on a regular monthly schedule as an inspection train accompanied by the superintendent, resident engineer, division storekeeper, roadmaster, etc. This is not an expense but a saving, as the same engine that pulls the superintendent pulls the supply train, and the local freights are relieved of this work and handle commercial freight only.

The supply train stops at every tool house, signal shop, pump house and station on the division and each point is thoroughly division as he becomes intimately acquainted with the desires of the superintendent regarding the operation of the division and is able to carry them out in the issues of material.

If it is not consistent with the policy of some roads to run special supply trains, they can be handled on local freights, but, to get efficiency, they must, at all times, be accompanied by the roadmaster and the division storekeeper, who has authority over all material on his division regardless of where located. The same care must be taken regarding having on hand what is required and regarding the delivery and picking up of scrap and all unnecessary supplies. On some railroads it is maintained that, while supply trains are useful on long stretches of railroad with light traffic, they can not be operated satisfactorily on roads with heavy traffic. With us our heaviest supply trains are operated on a division where we have 55 passenger trains per day on a double track.

In handling material with supply cars there is the following saving: No delays to trains on account of train crews stopping at each point during the month to handle thousands of articles needed along the line. No waste labor in packing material. No labor expended in billing thousands of articles that are handled from the supply trains. No cars destroyed for shippers by having

oil spilled in them. No billing or shipping back of empty containers to the store. No pilfering of material. No loss from breakage. No claims or correspondence regarding shortages.

One of the greatest advantages of the supply cars is the fact that we are able to carry out the exchange arrangement regarding station supplies, signal supplies, track tools and supplies. This can be accomplished in no other way. When tools are delivered we insist that the old tools be returned to us in exchange or a satisfactory explanation given at the time on the ground as to why an exchange cannot be made.

There is also the advantage of picking up old material, scrap, second-hand tools, etc., and bringing them to the shops each month, picking out the serviceable material, getting the scrap ready for sale, and repairing tools, hand cars, etc., for the next month's trip. We appear to forget that, in picking up scrap without the use of supply cars, a flat car may be set out by the local train at ten or twenty stations, delaying the train and keeping the car out of service.

The more we work with supply cars the more uses we find for them. On some of our divisions we arrange to send out, as far as possible, all assembled shipments with the supply trains. That is to say, every job which does not assume the importance of immediate action is assembled at the division store and shipped out direct to the work with the supply train and set out exactly where it is wanted with absolutely no delay to local trains and no back hauls.

When men are sent out to do the work, they know that the material is there complete, and that there are no breakages or shortages to delay them. The superintendent and proper officers, who, as before stated, accompany the supply train, know that the material has been delivered, and no delay to the completion of these jobs can be passed up to the store department.

The supply cars can be used to good advantage between trips in supplying and keeping in shape small outside stores where they can not be supplied on regular trips of the supply cars, although as many of these points as possible should be handled on schedule supply car trips.

Properly handled, the supply car is the economical medium through which to deliver substantially all material used in ordinary operation and maintenance, with the exception of lumber. Even with this we have at times distributed fencing, stringers, etc., at considerable saving. There should be no local shipping of company freight unless in carload lots.

L. O. Genest (Can. Pac.):—Our eight cars are operated as separate units and patrol 7,500 miles at stated monthly intervals, and are equipped and directed by four divisional storekeepers with a storeman in charge of each car. Deliveries are confined to light supplies and tools, such as are required for maintenance purposes for stations, sections, water supply, etc. Requisitions from each of the sixteen sub-divisions are sent to each of the respective divisional storekeepers not later than the twenty-second of the month for the following month's requirements, and are fastened separately (with brass fastener) in station order for each department and each section or branch, as the case may be, to enable a check to be made in the superintendent's office to insure receipt of all requisitions. The storeman in charge of the car wires the superintendent a day or so in advance stating the sub-division of his district the car will cover so that all concerned may be advised to have their oil cans and old material in readiness for the arrival of the car. Second-hand and worn out tools and material unfit for further service, such as axes, brooms, brushes, chisels, pails, shovels, lamps and fittings, etc., are returned to the storeman in charge of the car before deliveries of new supplies of a similar kind are made. Section foremen, unable to meet the car, deliver to the nearest agent their empty oil cans and whatever second-hand and worn out material they have for exchange.

In the event of storemen being unable to obtain the signature of agents, roadmasters or section foremen, on account of their absence at night or for other causes, the train conductor signs receipt form acknowledging delivery of the goods. A careful record is kept of the tools, etc., issued, and old tools turned in in exchange, and periodical statements furnished the general superintendent drawing his attention to any falling off in exchange. To insure the correct loading of each car the quantities of supplies and tools, etc., are detailed and totaled on wholesale lists. This information is abstracted from combined receipt and shipping slip, which is written from the original requisition, and ultimately sent to the audit office, after pricing, to serve as a basis for invoicing the particular department and account.

Our standard 47-ft. supply cars contain six oil tanks, two with a capacity of 700 gal. for coal oil, and four with a capacity of 155 gal. each for car, signal, valve oil and disinfectant. . The coal oil tanks are equipped with No. 40 Bowser pumps fitted with vacuum valves to prevent syphoning; the smaller tanks are equipped with faucets, and tanks are fitted with automatic measuring gages.

Discussion.—The Santa Fe, in addition to operating in the same way as the Southern Pacific, carries workman for making minor repairs along the line that would not pay for sending a special man from the nearest shop. H. C. Pearce stated that the Southern Pacific supply train carries all kinds of material of which small quantities are required.

OTHER BUSINESS.

The Monday afternoon session was opened with an address by R. M. Huddleston, general auditor, New York Central Lines west of Buffalo.

F. W. Brazier addressed the association Tuesday morning, laying particular stress on correct discipline.

E. J. McVeigh presented a paper, "The Authorized List," which was referred to the committee on recommended practices for further consideration.

A paper was presented on the stationery storehouse Canadian customs regulations. Many roads in the States do not properly ship their materials that are sent to Canada. Each shipment should be covered by suitable invoices and certificates. The Canadian roads have experienced considerable difficulty in releasing this matter from the customs officials, and the paper was presented for the information of the members.

A committee also reported on a standard book of rules. This book was drawn up for the purpose of having a concise and a ready reference for roads desiring to start a store department, and is supposed to represent the best practice of all the roads. The committee has not fully completed the book, and is to be congratulated on the thoroughness with which it is handling the work.

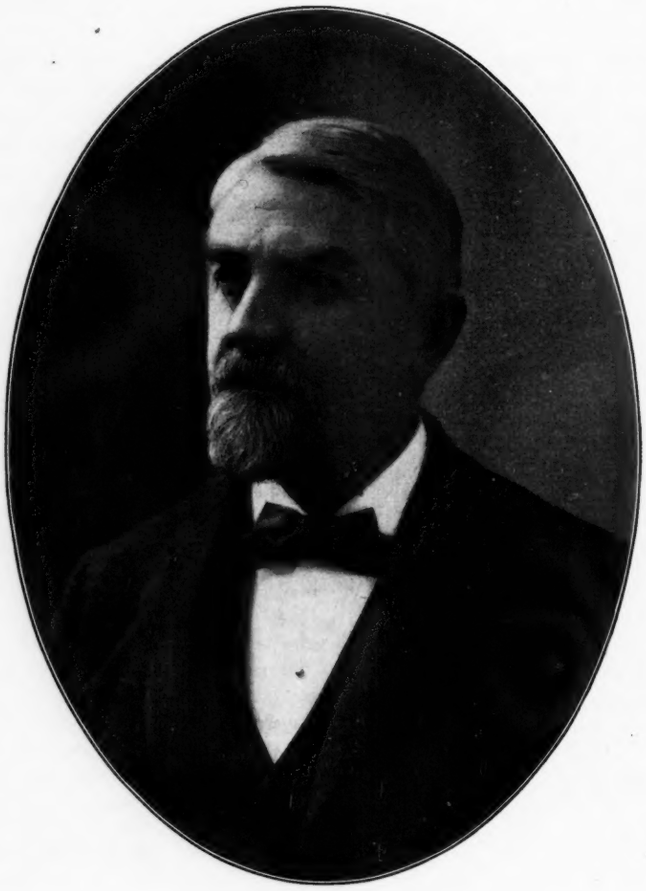
The following officers were elected for the ensuing year: President, J. W. Gerber, Southern Railway; first vice-president, G. G. Allen, Chicago, Milwaukee & St. Paul; second vice-president, H. C. Pearce, Southern Pacific, and secretary-treasurer, J. P. Murphy, Lake Shore & Michigan Southern.

NEW LINES FOR BRAZIL.—The president of the state of Sao Paulo has signed a decree authorizing an expenditure of $30,000 for expenses in surveying a railway from Guaratingueta to Cunha, and a decree authorizing the Paulista Railroad to construct and work a 30-mile branch line from Nova Odessa on the company's Campinas-Rio Clara line. It will cost $1,000,000.

PROJECTED RAILWAY CONSTRUCTION IN GREECE.—The development of railway communication throughout western Macedonia and Epirus is occupying the serious attention of the Greek government. It is proposed to link up the existing railway system in southwestern Macedonia with the Thessalian railways by constructing an extension of 62 miles and by widening the present narrow-gage lines. The existing line from Volo to Kalabaka is to be extended to Grevena and thence via Siatista to Sorovits, where it will join the main line from Saloniki to Monastir. From Grevena it is proposed to construct a line running westward via Metsovo to Jannina and thence to Preveza. As soon as peace has been concluded the Greek government will raise a loan of $58,000,000 to $77,000,000 for railway extensions and improvements.

HORACE G. BURT.

Horace Greeley Burt, for the past two years chief engineer of the Chicago Association of Commerce committee on Smoke Abatement and Electrification of Railway Terminals, and formerly president of the Union Pacific, died at the Oak Park Hospital, Oak Park, Ill., May 19, from the effects of an operation performed a few weeks ago. Mr. Burt was born in January, 1849. He was graduated from the high school at Terre Haute, Ind., in 1867, and from the University of Michigan in 1873. He began railway work in March, 1868, as rodman on surveys and construction of the St. Louis, Vandalia & Terre Haute, and from December, 1869, to December, 1870, was engaged on location and construction of the Joy railroads in Kansas. He then attended the University of Michigan until February, 1873, when he went to the Milwaukee & Northern for one month. He was next employed in the engineering department of the Chicago & North Western from March, 1873, to the summer of 1881, at which time he was made superintendent of the Northern Iowa division. In December, 1883, he was transferred to the superintendency of the Iowa division, and in October, 1887, he was promoted to chief engineer. He became general manager of the Fremont, Elkhorn & Missouri Valley in November the following year, leaving in July, 1896, to go to the Chicago, St. Paul, Minneapolis & Omaha as general manager. Three months later Mr. Burt was elected third vice-president of the North Western in charge of traffic, retaining that position until January 1, 1898, when he resigned to become president of the Union Pacific. After leaving the Union Pacific he took a trip around the world for his own recreation and instruction, leaving during the winter of 1904 and returning to Chicago in 1905. After returning from abroad he engaged in business as consulting engineer at Chicago, returning to active railway service again in January, 1909, when he was appointed receiver for the Chicago Great Western. In September of that year he once more took up private practice as consulting engineer at Chicago.



H. G. Burt.

Mr. Burt was probably best known from his connection with the reconstruction of the Union Pacific after Mr. Harriman got control. He was president during the general rehabilitation of the lines, shops and equipment. Later, while consulting engineer, he made a series of recommendations for the rehabilitation of the Kansas City Southern, which have been and are being carried out. He also had charge of important dock work at New Orleans, La., for the St. Louis & San Francisco and the Southern Railway, and reported on part of the Puget Sound extension for the Chicago, Milwaukee & St. Paul. He was suggested to President Roosevelt to take charge of the Panama Canal, but the position was not offered him. His experience covered the operating, traffic, engineering and executive departments. He was a persistent worker and was never satisfied until he had completed his work in the most thorough manner. He worked day and night. He was a reserved man and seemed brusque to most, but had a sympathetic side, which only his friends knew. He preferred to do his own thinking, and was inclined to dig into details himself unless he had intrusted them to a subordinate in whom he had implicit confidence. He was willing to receive the opinions of others without resentment, no matter how much they differed from his own, but he decided for himself. He took his trip around the world on his own account and not for Mr. Harriman. He had expected to make his report on the electrification of the Chicago terminals by January 1.

SPECIAL COMMITTEE ON LEGISLATION.

A meeting of the railways supporting the special committee on Relations of Railway Operation to Legislation was held in New York on May 21. The committee made its semi-annual report which was approved. The following is a summary of the report:

Three hundred and thirty-one roads (223,418 miles) are supporting the work of the committee.

At the third session of the Sixty-second Congress a bill was passed making the theft of property being transported in interstate commerce a federal crime, and constituting the transporting of any such stolen property from one state to another a separate offense.

This is the only legislation affecting railway operation passed at that session.

For reasons which are well understood, it appears probable that a number of bills will be pushed during the present congress, and the committee anticipates the necessity for active work during the next twelve months.

The working arrangement entered into by a committee representing the railways and a committee representing the employees, under the Hours of Service Act, was to expire on January 1, 1913, at which time a further conference on the subject was to be held.

In view of the fact that the Interstate Commerce Commission some months ago revised its reports in order that the effect of this working arrangement might be more clearly ascertained, it has been continued, by the tacit acquiescence of all parties thereto, until such time as the necessary data for consideration is available and further conference can be had on the subject.

After July 1, 1913, the rules for the inspection of locomotive boilers, issued by the Interstate Commerce Commission, June 2, 1911, require the setting of a factor of safety for locomotives which were in service prior to January 1, 1912.

This matter is of the utmost importance, as the establishment of such a factor of safety higher than is necessary would result in the elimination or reconstruction of a large number of effective locomotives now in service.

It will be necessary to conduct conferences with the Bureau of Locomotive Boiler Inspection, to precede hearings before the Interstate Commerce Commission.

In preparation for this, your committee has issued Circular No. 43, dated May 15, 1913, asking for the information necessary for a preliminary study of this question, and will be prepared to undertake these negotiations if authorized thereto by the railways at interest.

In view of the necessity for the uniform application of the rules for the inspection of locomotive boilers, your committee has collected, from all available sources, the rulings and opinions which have been expressed relative to the application of these rules. A compilation of these has been made, and such of them as seem in accordance with sound practice will be issued for the general information of the railways.

In order to show the progress of the construction of steel and steel underframe passenger equipment cars, your committee issued Circular No. 40, January 10, 1913, asking the railways as to passenger train equipment in service December 31, 1912, that acquired in the calendar year 1912, and that under construction or contracted for but not yet received on December 31, 1912.

A bulletin showing the results of this compilation will be issued.

In report No. 9 you were advised that further conferences with regard to the lighting specification were under way.

As a result of these conferences, on January 14, 1913, a lighting specification was issued to the railways in Bulletin No. 44, which had been approved by the Postmaster General December 28, 1912.

In order to give full effect to this specification, your committee arranged for the formulation of lighting plans to be used in connection with it. These plans are completed, and, upon approval by the postoffice department, will be issued to the railways.

In order to deal more intelligently with the various bills which have been introduced in congress looking to the compulsory adoption of block signals, the Sub-Committee of Signal Engineers secured data showing unit costs for construction, maintenance and operation of manual and automatic block signals. This information was transmitted to the railways through Circular No. 41, February 26, 1913, and the roads were requested at that time to advise the number of miles upon which automatic or manual block signals are now in service or under construction, and the number of miles upon which such signals would be installed, assuming that they would be required upon all passenger lines except those on which but one train at a time was operated.

Replies to this circular are now being tabulated, that the data may be available when bills requiring the establishment of block signals are under discussion in congress.

Your committee calls the attention of the railways to the order of the Interstate Commerce Commission, issued March 13, 1911, extending the time within which equipment in existence July 1, 1911, must be brought into conformity with the United States Safety Appliance Standards.

It urges that the railways examine their individual situation with respect to this matter, and expedite the equipment of cars with these safety appliances so far as may be consistent.

The lack of adequate laws prohibiting and penalizing trespassing on railway rights-of-way in the several states results in the deaths of a great number of citizens annually.

Your committee procured the introduction of bills to remedy this in a large number of state legislatures. Practically none of the states legislated on this subject, and the situation remains as it has been heretofore. In view of this, it is an open question whether federal legislation should not be sought.

During the first four months of 1913, forty-one state legislatures were in session. Twenty-seven of these had adjourned May 1. Up to that date there had been introduced into these legislatures 1,308 bills affecting railway operation, of which 174 were enacted into laws.

A bulletin will be issued analyzing the state legislation enacted during 1913 throughout the country. At the present time it can be said that there is little change in the tendency toward burdensome regulation. It is significant that eastern states, which have heretofore been relatively exempt from this kind of legislation, have been more active in this respect during the last two years. A large number of headlight laws now on the statute books in the various states, involving conflicting requirements, seem to point to the desirability for federal legislation on this subject.

In report No. 9 you were advised that the committee had undertaken the initial steps looking to the formation of committees of operating officers in a number of states at the request of the roads operating therein. Such committees were formed in the following states: Arkansas, California, Colorado, Idaho, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, Utah, Washington, Wisconsin, Wyoming.

The results obtained in most of the states where these committees were active have been such as to justify this method of dealing with state legislation.

The committee arranged to keep itself informed of all bills affecting railway operation introduced and passed in all states, and has kept its supporters advised. It has also made available for the use of the state committees data which has been found useful, either in Washington or in other states, thus co-ordinating the work of these committees as far as possible.

J. F. McGuire, general manager of the Lehigh Valley, was elected to succeed J. C. Stuart, vice-president of the Erie, as a member of the committee.

PLANS FOR NEW UNION STATION AT CHICAGO.

Plans for the proposed new passenger terminal at Chicago for the roads now using the old union station at Canal and Adams streets, the Pennsylvania Lines, Chicago, Burlington & Quincy, Chicago, Milwaukee & St. Paul, and Chicago & Alton, were placed before the committee on railway terminals of the Chicago City Council at public hearings on May 17 and 19, with the announcement that the roads are prepared to begin work at once, as soon as the sanction of the city is received in the form of permission for necessary street and alley changes. The general plan showing the location of the new terminal with reference to the present station, the official plan of the Chicago Plan Commission, and the proposed new post office building were described in the *Railway Age Gazette* of August 23 and 30, 1912, pages 354 and 390, but the detailed plans for the structure had not then been completed.

The designs have been made by D. H. Burnham & Co., who have been working out various studies for the new station for several years. The main station building, or headhouse, is to be on the west side of Canal street, bounded by Adams street on the north, Jackson boulevard on the south, and Clinton street on the west. To the east of the headhouse, and occupying the block east of Canal street to the river, between Jackson boulevard and Adams street, will be the main concourse, which will have on its north and south sides substantially two separate systems of stub-end tracks, 11 tracks for the roads entering the station from the north, and 15 tracks for the roads entering from the south. The concourse will be a covered building 180 ft. wide and 250 ft. long.

The principal feature of the main building is a waiting room 300 ft. long, 100 ft. wide and 120 ft. high. It is to be lighted by arched windows rising 100 ft. above the sidewalk. The entire space occupied by the building is to be about 320 ft. x 370 ft.

In architecture this building will be in classic style, freely interpreted and adapted to modern utilitarian requirements. Externally it will be featured by a Corinthian colonnade extending around the four sides. This colonnade will rise 64 ft. from the ground, the standard height adopted in the design of the chief buildings of the World's Fair in 1893. This Corin-

thian order will be surmounted by a high attic story which will form a complete belt crowning the main mass of the building. Above this in the center will rise the vaulted arches and pediments of the large room within.

The character of this hall in proportions, design and adornment was an inspiration from the thermal establishments of imperial Rome where, in the baths of Diocletian and Caracalla, the world first witnessed the development on a grandiose scale of the system of round arch and vaulted architecture.

The material for the exterior of the main building will be American white granite. The interior of the waiting room will also be white stone, as befits a structure which must combine solidity, dignity and cleanliness.

The concourse, between Canal street and the river, with low roof rising from the center of a broad plaza, will be a vaulted building, and will harmonize in exterior structure with the main building.

The descending street grade from the river west proved a fortunate circumstance, and advantage was taken of it in designing the main building. The floor of the waiting room is below the street level and on the same elevation as the tracks in the concourse. Measured from Clinton street on the west the tracks will be only 12 ft. below grade. There will, therefore, be no long flights of stairs between travelers within the station and their trains.

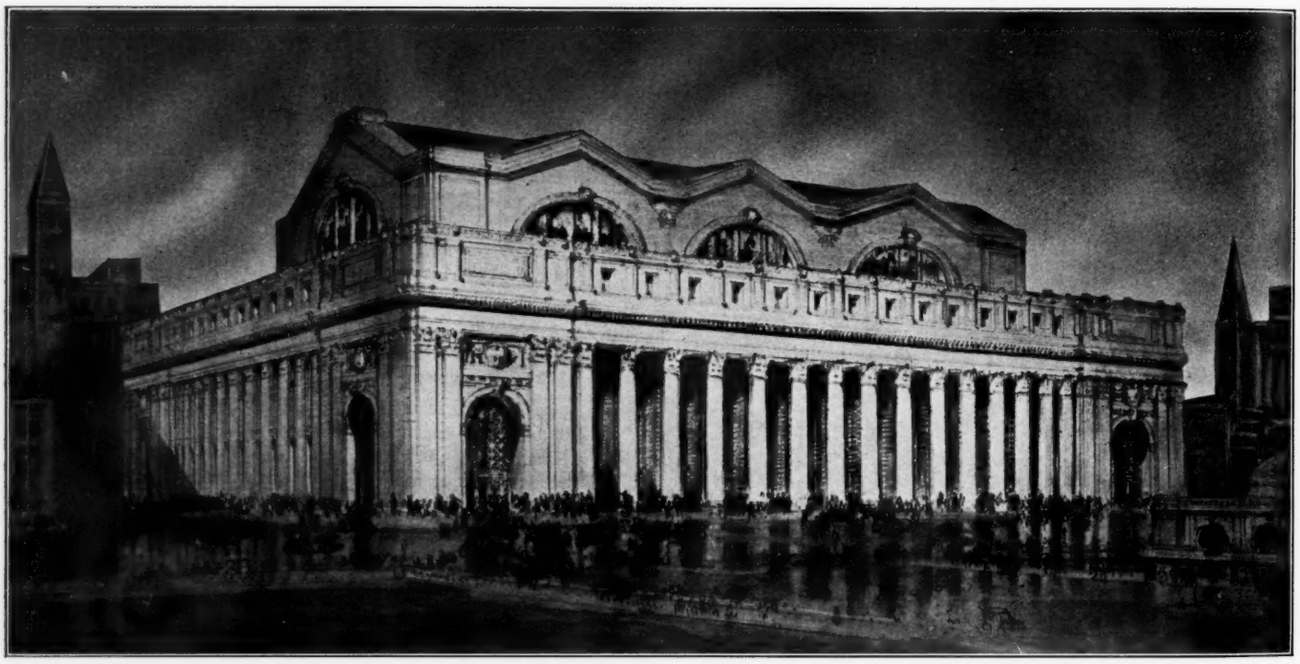
The buildings have many entrances. The main building will have no "main entrance," but will be equally accessible on all four sides. The designers have taken account of the fact that in a modern terminal passengers must be able to approach from any direction and pass at once by the most direct line to the waiting train. Entrances and exits must be universal that confusion may be avoided, time be saved and effort be unwasted. It is planned that there will be no crowding, even in the hours of the suburban rush. The people will be "melted away" through many passages. Access to the concourse will be as free as to the main building.

The main building and the concourse will have streets on all sides. Along the river a broad boulevard will flank the concourse on the east. Nowhere will there be anything to hamper ingress, egress or free movement within. Without will be broad streets and ample plazas. Cab stands will be conveniently located and under cover within the headhouse and concourse.

In designing this passenger terminal the aim has been to create a railway station completely separated from all railway service save the most convenient and expeditious handling of passengers and baggage. Elaborate office building features have been omitted; there will be only such offices as are necessary to the operation of the terminal itself.

The closest attention has been given to the needs and desires of the traveler. In addition to conveniently disposed ticket offices, baggage rooms and information bureaus, there will be grouped about the main waiting room restaurants, telephone and telegraph stations and numerous shops for which there is an increasing demand as the conveniences of traveling increase.

Facing the concourse there will be 26 train tracks—11 leading to the north and 15 to the south. In the lower levels beneath headhouse, tracks and concourse will be provided the most modern equipment for the mechanical handling of baggage, mail and express. Baggage will be passed up to the cars from below. Mail sacks will be handled in the same manner. Methods for the mechanical handling of mail, worked out in recent years in the Chicago postoffice will be further improved, and it is predicted that the facilities will show some striking advances in modern, scientific methods for the saving of time and labor.



Proposed New Union Station, Looking Northwest from Canal and Jackson Streets.

The location of the terminal, as decided upon by the roads now using the old union station, and announced by them last August, has aroused considerable controversy among the advocates of various plans for a general scheme of location for all new railway terminals to be built in the city. For this reason a committee on railway terminals, consisting of 15 aldermen, was recently appointed by the city council to consider the questions of electrification and the location of proposed terminals. This committee has begun a series of hearings at which it proposes to consider all plans that may be submitted to it. At a hearing on May 14 Jarvis Hunt, the architect of the new Kansas City union station now under construction, described before the committee the plan which he has recently been advocating before various local organizations, which provides for central passenger and freight terminals for

all roads except the North Western to be located south of Twelfth street. The plan also contemplates the straightening of a bend in the Chicago river, and the re-location of railway freight terminals along the river in order to open up new streets into the central business district. Mr. Hunt urged the committee to force the union station roads to join the central terminal plan by refusing the necessary permission for their proposed station.

On Saturday, May 17, a hearing was held to allow the union station roads to present their plan. A. J. Earling, president of the Chicago, Milwaukee & St. Paul; Darius Miller, president of the Burlington, and J. J. Turner, vice-president of the Pennsylvania Lines, testified that they had investigated the Twelfth street plan and found it impracticable, but that after several years of planning they were ready to proceed along the lines announced last year, and to build for Chicago one of the finest railway stations in the world. Mr. Earling said that the Hunt plan could not be carried out in 50 years; that the location of the Chicago river would interfere with the operation of trains into the station, and that track elevation plans would so complicate the matter that no feasible arrangement could be worked out. Mr. Miller said that on account of the location of the river there was not enough room south of Twelfth street, and that it would require trains to enter the station by a draw bridge, which would be intolerable. Mr. Turner not only objected to the plan on account of the lack of space, and the conditions imposed by track elevation, but declared that Chicago is too large for one central terminal, both on account of the distances that would be involved, and the congestion that would be created.

F. A. Delano, president of the Wabash, placed before the committee various studies of the general plan he has long advocated for the location of the terminals of railways entering Chicago from the south on the south side of Twelfth street as widened into a boulevard, in accordance with the Chicago plan. He said he did not appear as the advocate of any particular plan, and that he had not proposed a union station, but a series of stations on Twelfth street for the groups of roads now using separate stations. He thought the Hunt plan included several excellent suggestions, but that the committee, with the advice of competent engineers, after having considered the various plans proposed, could devise a better plan than any that had yet appeared. He resented the statement that a location south of Twelfth street is impracticable and criticized some of the arguments made against it. He declared that if the Pennsylvania group of roads do not move back to Twelfth street the Rock Island and the New York Central Lines now using the LaSalle street station probably would not move back nor the roads now using the Western Indiana station at Polk and Dearborn street. Therefore, if the plan for the union station at Jackson street is adopted, the result will be six separate stations, as at present, with no relation to each other, or to the local transportation lines of the city.

He was followed by A. H. Smith, senior vice-president of the New York Central Lines, who said the New York Central had not seriously considered any plan for a new terminal in Chicago in the near future, and that the LaSalle street station would be adequate for some time to come. He frankly announced that the New York Central believed it now had an advantageous location, and that if the Pennsylvania were allowed to retain its present location near the heart of the city the New York Central could not afford to move south, and he thought that it would not be fair to ask the Pennsylvania to move south to Twelfth street, leaving the New York Central where it is. If the Pennsylvania moved its terminal south the New York Central would be willing to consider doing so also, but would want to know "where it would light before it jumped."

At another hearing on Monday, May 19, W. A. Gardner, president of the Chicago & North Western, said that the North Western with its new terminal had no reason to consider any of the new plans. The principal reason for its change in location when the new station was built was to eliminate the drawbridge over the river at the entrance to the station, which caused many delays to trains, and that while he was not interested in the Twelfth street plan, he thought no railroad man would want to place a new station where a drawbridge would be required to enter it, and he thought it would not be a good plan to put so many stations in one place.

C. H. Markham, president of the Illinois Central, declared that the Illinois Central was "too well fixed" at present to consider joining with the other roads in any union station plan, and therefore had not considered the Hunt plan. The Illinois Central is practically under contract with the city to build a new station, he said, and will ask permission of the city council to locate its station on the present right of way at Twelfth street and Indiana avenue, facing north. This will be a stub-end terminal, except for the suburban tracks, which will run through to Randolph street along the lake front as at present. It is planned to have room for 32 or 36 tracks on an upper level and 36 more on a lower level. He was asked by an alderman whether the station was being planned with reference to electrification, and answered by saying that there was nothing in the plan that would interfere with electrification. Mr. Miller made a similar statement for the proposed union station.

The union station plans were described to the committee by E. R. Graham, of D. H. Burnham & Co., who is also the architect of the Chicago Plan Commission. He declared that the site proposed for the union station is not at variance but in complete harmony with the Chicago plan, which originally proposed as the best available locations for permanent passenger stations for all the roads, first, between Canal and Clinton streets from Lake to Twelfth streets, and second, on Twelfth street widened. When the roads decided on the location for the new union station it was approved both by the plan commission and by the executive committee of the Chicago Association of Commerce, with a recommendation that the new postoffice building be located immediately west of the station. The plan committee also recommended that the main east and west axis of the Chicago plan be relocated so as to center on Jackson and Adams streets. The plan therefore provides for the terminals of the west side roads on Canal street and of the south side roads on Twelfth street, the Illinois Central at approximately its present location and other roads west of it, thus locating all terminals where they will be most accessible to the center of the city and to each other. With Michigan avenue widened and continued to connect with the North Side, Twelfth street widened to a boulevard, and Canal street boulevarded from Twelfth street north to Chicago avenue passing the North Western terminal at Madison street, all stations would be connected by a square of boulevards within which there would be no railway tracks.

Another hearing is to be held by the committee on Friday to consider other plans.

NEW RAILROAD COMPANY IN BRAZIL.—The Companhia Estrada de Ferro Agricola de Santa Barbara has been formed in Sao Paulo to construct a railway between Villa Americana or some other point on the Paulista Railway and the town of Santa Barbara, to engage in agricultural pursuits in the zone served by said railways, to exploit waterfalls, and to purchase and sell agricultural products.

STATION PLATFORM CHARGES IN ENGLAND.—The London & Northwestern now makes a charge of one penny for admission to train platforms at Waterloo station, London, and it is said that all of the large English roads contemplate imposing a like charge. This practice, designed to prevent unnecessary congestion on platforms has been in operation at a number of stations in Europe heretofore. It is said that the Lancashire & Yorkshire has adopted it at the Victoria station, Manchester.

THE AMERICAN RAILWAY ASSOCIATION.

Meeting in New York Receives Reports from Several Committees. Membership Is Now 358, Representing 267,177 Miles.

The spring session of The American Railway Association was held at the United Engineering Society building, New York City, on May 21, 1913. There were present 213 members, represented by 200 delegates.

The Executive Committee reported that the membership now comprises 358 members, operating 267,177 miles, an increase of 10 members, and an increase of 162 miles. The associate membership now comprises 137 members, operating 7,913 miles, an increase of 13 members, and an increase of 633 miles.

The Executive Committee stated that a member of the association had brought to its attention the question of shipping broken glass in bulk and which was duly referred to the Committee on Transportation. The following recommendation was received from that committee:

The Committee is of the opinion that shipments of broken glass in bulk should be accepted only when loaded in closed cars; when accepted for shipment in open cars the glass must be enclosed in packages. It was the feeling of the committee that the question should be brought to the attention of the various traffic associations so that the tariffs might be revised to cover the suggested recommendation of the committee.

The Executive Committee concurred in this recommendation and referred it to the several traffic associations. Advice has been received that the Official and Southern Classifications have been so changed to cover satisfactorily the suggestion made by the Committee on Transportation.

The Executive Committee also reported in connection with the action taken by the association to eliminate Per Diem Rule 5, effective July 1, 1913, that it adopted at a meeting held on February 5, 1913, the following resolution:

Resolved, That the president be authorized to request the appointment of a committee of traffic officials of two respectively, from the various traffic associations of the country interested and involved, to consider the request of certain switching lines for relief on account of the elimination of Per Diem Rule 5, effective July 1, 1913, and that this committee be requested to confer and act with the Committee on Relations between Railroads in the consideration of the subject.

Immediately following the meeting of the Executive Committee the Trunk Line Association, the New England Freight Association, the Southeastern Freight Association, the Southwestern Tariff Committee, the Trans-Continental Freight Bureau and the Western Trunk Line Committee were requested to designate representatives from the territories covered by these organizations to consider the subject in question.

In order to give sufficient time for the committee of traffic officials to complete its work in conjunction with the Committee on Relations Between Railroads, it is now proposed that the date for the elimination of Per Diem Rule 5 be changed from July 1, 1913, to January 1, 1914.

In connection with the elimination of the Per Diem Rule 5, it is the feeling that a further examination should be made of the subject of reclaims, and for that purpose the president of the association was requested by the Executive Committee to appoint a commission to study the question. The commission has been asked to report its conclusions to the Executive Committee in time for presentation to the association at its November meeting.

The president has appointed as members of this commission, F. A. Delano, receiver, Wabash Railroad; W. L. Park, vice-president, Illinois Central, and George L. Peck, vice-president, Pennsylvania Lines West of Pittsburgh.

In its report the Executive Committee stated that a number of members of the association have suggested to the Executive Committee that the association should recommend what in its opinion should be considered proper practice at cross-overs. This important question was referred by your committee to the Committee on Transportation for its recommendations and that committee made the following report to the Executive Committee:

Relative to the question regarding the proper practice to cover cross-over movements both as to rules and signaling which has been referred by the Executive Committee to the Committee on Transportation.

The subject has been carefully considered and it is the opinion of the Committee on Transportation that cross-over movements should be made under such careful speed regulations as are required by local conditions.

The committee believes that to make safe the use of signal installation, or cross-over arrangements, all railroads must require absolute obedience to the rules and regulations governing the observance of signals, the use of cross-overs and the speed of trains through turn-outs; and that with such proper speed regulations and enforced obedience thereto, cross-over movements at reduced speed may be made with safety.

The committee further recommends that on main tracks the top (high speed) arm of home interlocking signals should not be used for cross-over or diverging movements.

The Committee on Transportation also reported to the Executive Committee that it does not believe that a requirement that trains must come to a stop before using a cross-over is necessary for safe operation, and that it is inadvisable to require trains to come to a stop when unnecessary because it introduces an added element of danger.

The Executive Committee stated that at the request of a member of the association, and in view of the importance of the subject at the present time, it has requested the Committee on Transportation and the Committee on Maintenance acting jointly to define the essential requisites for the installation of automatic train stops and has referred the general subject of automatic train stops to them.

The Executive Committee also reported a memorial note placing on record an application of G. W. Parker, the first president of the American Railway Association, who died on January 19, 1913. When the former General and Southern Time Conventions were consolidated into the organization which subsequently became the American Railway Association at Cincinnati, Ohio, on April 14, 1886, Mr. Parker (who was then the vice-president and general manager of the St. Louis, Alton & Terre Haute Railroad) was unanimously elected its first president, serving in that capacity for the ensuing year. During his administration the organization was placed upon a firmly established foundation. His great interest in the association was shown not only at this time, but during its entire subsequent existence and he was present at its last meeting held in Chicago on November 20, 1912.

The Executive Committee also reported that W. F. Allen had been re-elected general secretary and treasurer, and J. E. Fairbanks, assistant general secretary and assistant treasurer, for the ensuing term.

The Committee on Transportation presented a report in which it submitted several questions and answers concerning practice under the Standard Code of Train Rules and the Standard Detour Agreement, which were approved by the association. The committee stated that its investigation of the current practice on the various railroads in regard to train rules has been most extensive and thorough, and that it has obtained a mass of information which is being carefully examined in detail. While the committee has been actively engaged with this subject and has devoted a great deal of time and attention to it, it is not as yet ready to report. The committee also reported that an auxiliary committee had been appointed to consider the best method of promoting the widespread establishment of "safety first" organizations among the officials and employees of members of the association. This committee consists of the following: R. C. Richards, general claim agent, Chicago & North Western; George Bradshaw, general safety agent, New York Central Lines; W. B. Spaulding, claim attorney, St. Louis & San Francisco; J. W. Coon, assistant to general manager,

Baltimore & Ohio, and S. J. Peterson, general claim agent, Union Pacific.

The Committee on Maintenance reported that the question of the standard dimensions of box cars had been taken up with the several classification committees, and is being developed as rapidly as its importance will permit. The committee presented a summary of replies to circular No. 1239, showing the progress which has been made in the adoption of the resolution approved by the association on May 17, 1911, respecting the subject of salt-water drippings from refrigerator cars. The committee also included in its report a summary of replies to circular No. 1263, respecting the number of freight cars, passenger cars and locomotives equipped with safety appliances, as required by the United States Safety Appliance Standards, as of January 1, 1913, as follows:

	January 1, 1912.	July 1, 1912.	January 1, 1913.
Number of members reporting	287	323	324
1. (a) Freight cars in service	2,048,267	2,237,946	2,268,068
(b) Passenger cars in service	46,455	49,658	51,114
(c) Locomotives in service	53,072	59,599	60,898
2. Fully equipped with safety appliances required by United States Safety Appliance Standards, promulgated by Interstate Commerce Commission in its Order, dated March 13, 1911:			
(a) Freight cars	119,540	254,681	464,633
(b) Passenger cars	9,478	17,747	24,687
(c) Locomotives	14,391	33,784	47,483
3. Fully equipped with secure grab-irons or hand-holds on the ends and sides of each car, as required under Section 4 of the Act of 1893 as amended April 1, 1896, and March 2, 1903:			
(a) Freight cars	2,046,906	2,237,773	2,268,062
(b) Passenger cars	46,336	49,647	51,112

The Joint Committee on Automatic Train Stops reported that E. C. Carter had been elected chairman. The committee stated that the subject of automatic train stops had been carefully considered, but requires more time for its satisfactory investigation. It presented a series of tentative definitions and requisites of installation covering systems of automatic train control. At the request of the joint committee these were discussed and referred back to it for further consideration.

The Committee on the Safe Transportation of Explosives and Other Dangerous Articles reported that in response to requests from shippers of explosives and other dangerous articles, the Interstate Commerce Commission has agreed in conference upon several minor amendments to the regulations, and a date will be named upon which a hearing will be held. The committee also reported that the Board of Railway Commissioners for Canada has revised its regulations for the transportation of explosives to make them conform to the regulations prescribed by the Interstate Commerce Commission as amended January 1, 1912. The regulations for the transportation of dangerous articles other than explosives will be submitted to the board for adoption as soon as the result of the hearing in Washington is ascertained.

The Committee on Electrical Working advised that it has no changes to suggest in the standard limiting clearance lines for third rail working conductors, as adopted by the association, but proposes, after conference and agreement with the American Railway Engineering Association and the American Electric Railway Engineering Association to submit at a future meeting a recommendation for the prolongation of certain of the clearance lines within the space between their termination and the nearest running rail. The committee also reported that it had under consideration the question of clearances for overhead working conductors which it proposes to discuss with the Electrical Working Committees of the American Railway Engineering Association and the American Electric Railway Engineering Association, with a view of presenting a full report, at a later date, with recommendations covering the essential overhead clearance requirements. In advance of the final report, the committee submitted as information its preliminary conclusions of the limiting conditions to be met in operation with the existing rolling stock dimensions and locations of overhead permanent way obstructions. It is hoped that this information will prevent further encroachment upon the space required for the installation of overhead conductors by the building of cars of a height exceeding the recommended standard of the Committee on Maintenance.

The Committee on Relations between Railroads presented an amended form of Per Diem Rule 9, which was approved by the association. Amended forms of Car Service Rule 15, and also the standing resolution of the association covering the subject of advertisements on freight cars were presented and approved by the association. The following interpretations to Car Service Rules 10 and 15 were also presented and approved:

Question.—Under Car Service Rule 10 as adopted November 20, 1912, may claims for cars received prior to that date be made at any time prior to November 20, 1913?

Answer.—Yes.

Question.—Under Car Service Rule 15, effective September 1, 1912, must the delivering line, in the absence of a local agreement, honor a per diem reclaim to cover the detention of a car or cars held while undergoing transfer?

Answer.—No.

The association approved the recommendation of the Committee on Relations between Railroads that a monthly report be obtained from the members of the home and foreign cars light weighed on their lines.

A revised form of average agreement for use under Rule 9 of the National Car Demurrage Rules was approved.

The following resolution was also adopted:

Resolved, That proper car distribution rules, as referred to in the note to National Car Demurrage Rule 1, Section B, should include a provision to the effect that empties placed in time for loading and not loaded, part loads and loaded cars for which billing has not been furnished be charged against the succeeding day's allotment.

The committee reported that the Sub-Committee on Packing, Marking and Handling of Freight has been in constant communication with Classification Committees and Weighing Bureaus respecting the marking and packing of freight, and that on the recommendation of the Sub-Committee 30,000 copies of an article entitled "Why Some Men Fail" have been distributed. Instructions for trimming coal on freight cars as recommended by the Committee on Relations between Railroads were approved by the association.

Interpretation No. 39 rendered by the Per Diem Rules Arbitration Committee was approved as follows:

Question.—Are claims under Per Diem Rules 5 and 11 valid when presented by claiming road to the local freight agent of road from which allowance is claimed?

Answer.—No. Claims are not valid unless sent to proper car service officer of road from which allowance is claimed.

The track scale specifications and rules as recommended by the Committee on Relations between Railroads were approved as recommended practice by the association.

Henry Miller, general manager for the receivers of the Wabash, was elected second vice-president of the association; W. G. Besler, vice-president and general manager, Central of New Jersey, and Fairfax Harrison, president, Chicago, Indianapolis & Louisville, were elected members of the Executive Committee; Benj. McKeen, general manager, Pennsylvania Lines West of Pittsburgh; J. C. Stuart, vice-president, Erie, and G. W. Taylor, general superintendent of transportation, Southern Railway, were elected members of the Committee on Nominations. The New York Central & Hudson River, the Pennsylvania Railroad and the Seaboard Air Line were elected members of the Committee on Transportation. The Chicago & North Western, the Chicago, Rock Island & Pacific, and the Philadelphia & Reading were elected members of the Committee on Maintenance. The Chicago, Milwaukee & St. Paul, the Illinois Central and the Southern Pacific were elected members of the Committee on Relations between Railroads.

The association decided to hold its next session in Chicago on November 19, 1913.

General News.

The Southern Railway has made a general increase in the pay of shopmen.

The Union Pacific is now double-track from Omaha, Neb., to Cheyennee, Wyo., 516 miles. This is by far the longest stretch of double-track railroad west of the Missouri river.

A freight house of the Cleveland, Cincinnati, Chicago & St. Louis, at Indianapolis, was partially destroyed by fire on the night of May 8. The loss, including a large quantity of freight, is estimated at $10,000.

Twenty-seven farmers along the lines of the Texas & Pacific Railway in Louisiana have filed suits against the road for damages ranging from $139 to $1,500 each for alleged failure of the company to furnish cars in which to ship their produce to the markets.

Four hundred men employed on the construction of the Kettle Valley Railway, a subsidiary of the Canadian Pacific, went out on strike on May 9, putting a stop to work on 47 miles of the road. Agitation by officers of the Industrial Workers of the World is said to have led to the strike.

The joint tunnel committee of the Denver commercial organizations has received a letter from President Darius Miller, of the Chicago, Burlington & Quincy, saying that the Burlington will be glad to see the Denver, Northwestern & Pacific tunnel completed, and "hopes to be able to co-operate with the company in making it profitable and useful to the commercial interests of Denver."

Disturbance of traffic in northern Mexico by reason of the activity of the rebels in that region seems to be growing worse rather than better; and press despatches from Mexico City say that a complete suspension of operations after June 1 is in contemplation. This is in furtherance of a plan to weaken the rebels by cutting off their supplies. In Chihuahua no railroads are operating south of Chihuahua City.

The state's attorney at Bridgeport, Conn., announces that the trial of President Mellen and ex-Vice-President McHenry, of the New Haven road, for manslaughter, in connection with a derailment last October will be postponed until the September term of the Superior Court. His plan to have the trial take place the present month could not be carried out on account of the assignment of judges allowing insufficient time.

The amount paid out by the Pennsylvania Railroad in the year 1912 for goods damaged in wrecks was only $1,600; while on claims for losses due to theft, the aggregate payments were $28,908. As the lines of the Pennsylvania run through many states the officers are congratulating themselves on the new federal law, the Carlin act, under which thieves stealing from interstate shipments may be prosecuted in the federal courts.

The workmen's compensation act passed by the legislature of New York at its session recently adjourned, has been vetoed by the governor, who finds serious objection to the law because it will not reduce the amount and cost of litigation, which is the crying evil under the present system. The governor thinks that the legislature should try again next year, and formulate a law which shall more fully carry out the promises which have been made by the democratic party.

Marcel G. Brindejonc des Houlinais, a French aviator, on May 18, flew from Hendon, England, to Calais, and back, without landing, a total distance of 100 miles, in 55 minutes; and he carried one passenger. On May 17 a flight in an airship was successfully made from Key West, Fla., to Havana, Cuba, the aviator taking a $10,000 prize which had been offered by the Cuban government. On the 19th another aviator, who failed in the competition of the 17th, made a successful flight, occupying two hours and ten minutes.

The Advisory Committee of the railroads which was created at the meeting in New York City, April 24, to attend to matters connected with federal valuation, met in New York, May 16. The committee will confer with the Interstate Commerce Commission at Washington, May 27. Thomas W. Hulme has been chosen secretary of the committee. Samuel Rea is general chairman; L. F. Loree, chairman of the eastern group; W. W. Finley, chairman of the southern group, and Hale Holden, chairman of the western group.

The New York State Civil Service Commission, Albany, announces competitive examinations June 14 in various cities for a number of positions in the service of the state, and of counties and villages. Among these are junior bridge draftsman, salary $900 to $1,200; bridge designer, salary $1,500 to $2,100; junior railway engineer for the Public Service Commission, First district, salary $900 to $1,200, and inspector of steel, salary $1,500. For the last-named position several men will be wanted to go to the steel manufacturing plants in Pennsylvania.

A press despatch from Hinton, W. Va., reports that on Tuesday of this week a train of the Chesapeake & Ohio in which were six passengers was swept 300 ft. down the mountain side by a landslide, and the six passengers killed. The train consisted of an engine, three freight cars and a caboose. The passengers were in the caboose. The train had been stopped between Sewell and Landisburg because of an obstruction on the track, due to a storm, and while the train was at a standstill and the trainmen were clearing the track, the cars were overwhelmed by a mass of earth which fell from the mountain above.

Beginning on July 1, the Texas State Railroad, operating between Palestine, and Rusk, Tex., will be operated under the jurisdiction of the governor instead of the State Prison Commission. Governor Colquitt has announced that he will assume the active management, and that instead of reporting a monthly loss he believes he will be able to make the road earn from $1,000 to $2,000 a month. The governor recently made an inspection trip over the road with President W. B. Scott, of the Sunset Central Lines, for the purpose of obtaining advice from a practical railway man. A number of improvements are contemplated.

The ticket office of the Pennsylvania Railroad at Pittsburgh has been reorganized so that a passenger can now get a ticket to any station by going to any one of the windows which is open. There are eight windows and the attendant at each of them has a complete stock of tickets. Heretofore, different windows were assigned to different divisions or sections of the road. Six additional sellers have been employed and the working hours of the men will be lessened. Four windows are open at all times, and this number is increased to eight during that portion of the day when travel is heaviest. By the new plan, which is the same as that in force at New York, Washington and Baltimore, a passenger standing in line and delayed by someone ahead of him who holds a long conversation with the ticket seller, can drop out of the line and go to another window.

The Pennsylvania Railroad reports that recently enacted legislation governing railroad operation in the States of New York, New Jersey and Pennsylvania will cost it about $1,200,000 a year. In Pennsylvania the full crew law costs the road $555,085 and the semi-monthly pay bill, which has just become a law, $275,000 a year. In New York the full crew bill will cost $101,160 a year. In New Jersey the grade crossing bill if literally enforced would cost the Pennsylvania more than $60,000,000. But aside from that the semi-monthly pay bill in that state costs $30,000, the crew law $219,840 and the drinking water law $18,000 a year. Thus the legislation in these three states, excluding the New Jersey grade crossing bill, will cost the Pennsylvania $1,199,085 a year. This sum represents the annual return at 5 per cent. upon nearly $24,000,000 of capital. The expenditure by the Pennsylvania on account of new laws, Federal and state, from August 1, 1906, to January 1, 1913, was $10,936,134.

Boston & Maine Pensions.

The Boston & Maine now pays $8,206 a month in pensions to 258 employees. In the thirty months from October 1, 1910, to March 31, 1913, there has been an increase in the pensions paid to employees amounting to $169,742. The rate of increase in the amount of pensions paid is greater this year than in either of the two previous years, showing how the system is being extended.

The number of pensioners at the present time is 258. There are 22 general and other officers receiving a total of $2,409; fourteen clerks receiving $324; forty-seven agents and stationmen

receiving $1,073; thirty-nine switchmen and watchmen receiving $675; thirty-nine enginemen receiving $1,245; sixteen passenger conductors receiving $545; six freight conductors receiving $198; four other trainmen receiving $110; forty-eight shopmen receiving $1,142, and twenty-three section foremen and laborers who get $481.

Hope Deferred.

After thirty-seven years of agitation and expectation on the part of the people of Western Canada, the first mile of the Hudson Bay Railway was completed May 17, when the J. D. McArthur Company's engine No. 15 finally crossed the Saskatchewan river, pushing before it a rail laying machine and hauling one material car. About 500 men are now at work on the first portion of the road and it is expected to lay almost half of the track this year.

The Pennsylvania's Mileage.

The annual record of transportation lines of the Pennsylvania Railroad shows a total of 11,644 miles of line in the system, and 25,695 miles of track. The system paid out last year $188,749,312 in wages, or $7,346 for every mile of track, and there are more than eight employees for every mile. While the present mileage of line is only 1,088 greater than in 1902, there has been an increase of 1,335 miles in second track, 277 in third track, and 224 in fourth track; and an increase of sidings and yard track from 5,916 to 8,965, or 3,049 miles.

Coal Producers Big Consumers.

The Department of Mines of Pennsylvania reports that in 1901 only 9.2 per cent. of the amount of coal shipped was consumed at the mines for steam and heat; while 10 years later, in 1911, this amount had risen to 11.4 per cent. In 1901 the number of tons of coal shipped from the anthracite regions of Pennsylvania was 45,271,608, and the number of tons consumed at the mines was 4,880,932. In 1911 the figures were $71,227,687 and 8,171,494. At some of the mines where twenty-five to thirty tons of water have to be pumped or hoisted for every ton of coal extracted, over 25 per cent. of the coal produced is used for steam and heat.

A Fifty-Year Comparison.

A man who bought 100 shares of Pennsylvania Railroad stock 50 years ago—say the first day of the battle of Gettysburg—paid approximately $6,000 for it. If he kept it until today he would have received about 6 per cent. on his money all that time, but his capital would now be only $5,600.

Had a man on the same day bought a piece of real estate for $6,000 in the central part of Philadelphia or in any direction around it or in almost any other thriving town, the increase in his capital now would be very great, in almost every case. One man who 24 years ago paid $30,000 for a Chestnut street property recently refused $460,000 for it. His capital has multiplied by more than 15.

It is a curious thing that there is such a general impression that those who own railroads have grown rich with amazing rapidity. The truth is that a dollar invested half a century ago in America's largest railroad and the one where traffic is densest and the people richest, and where business has grown the fastest, is worth a little less than a dollar today. Similar comparisons might be made with the other standard lines of the East.—*Philadelphia Public Ledger.*

Loyalty with a Definite Meaning.

The very unusual action of Illinois Central employees in offering to aid the company financially, following its losses from floods and other causes, was noticed in the *Railway Age Gazette* of May 16, page 1101. The publication of this fact brings out another case, that of employees of the Buffalo & Susquehanna in 1911. On September 25, of that year, J. S. May, superintendent, received a letter from H. E. Marvin, an engineman, acting as "secretary for employees," saying:

"The employees desire to express in a suitable way their appreciation of the attitude and kind treatment of the Receiver, Mr. H. I. Miller, the Assistant Receiver, Mr. E. R. Darlow, and yourself, and our belief in your policy of making and maintaining a successful railroad. We greatly regret the accident which occurred some time since, and the employees, therefore, are cheerfully requesting you to deduct a day's pay to help offset in so far as possible the financial loss caused by the above mentioned accident. We wish it, however, distinctly understood that we are not by this action trying to influence in any way your decision in regard to any men who are at present out of the service, as we have learned from our pleasant relations with you in the past that you are absolutely fair.

"It must be gratifying to know that today you stand in a unique position in American railroading as being the possessor of the good will, respect and the whole hearted effort of every man in the service. That this is true is evidenced by a great many facts."

Basis of the Model Station.

Even though a station may be perfect from the standpoint of official rules and regulations, it may yet fall far below when judged by the traveling patron. I want people to know that they are just as welcome when they come into this station to have some money changed, as when they enter to purchase a ticket across the continent.

Neither my clerks nor myself want passengers to think that they are obligated to us; we feel that we are obligated to them. I always make it a rule personally to request an investigation of any grievance held against us by anyone. Sometimes little unfortunate matters will occur where there is a misunderstanding between passenger and employee. We are glad to hear complaints, as it gives us opportunities to forestall repetitions of the kind. By having our weaknesses pointed out by patrons, we can therefore fortify ourselves in our weakest places, and thus can better please the public Each day I make it a point, on arriving at the station, to inspect thoroughly all departments, not from the viewpoint of the agent but rather that of the passenger.—F. E. Watson, Pasadena, Cal., in *L. & N. Bulletin.*

International Engineering Congress, 1915.

In connection with the Panama-Pacific International Exposition, which will be held in San Francisco in 1915, there will be an International Engineering Congress, in which engineers throughout the world will be invited to participate.

The congress is to be conducted under the auspices of the following five engineering societies: The American Society of Civil Engineers, the American Institute of Mining Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, and the Society of Naval Architects and Marine Engineers.

These societies, acting in co-operation, have appointed a permanent Committee of Management, consisting of the presidents and secretaries of each of these societies, and 18 members living in San Francisco. The personnel of this committee is as follows: Representing the American Society of Civil Engineers, Geo. F. Swain (president), Chas. Warren Hunt (secretary), Arthur L. Adams, W. A. Cattell, Chas. Derleth, Jr., and Chas. D. Marx; representing the American Institute of Mining Engineers, Charles F. Rand (president), Bradley Stoughton (secretary), H. F. Bain, Edw. H. Benjamin, Newton Cleaveland and Wm. S. Noyes; representing the American Society of Mechanical Engineers, W. F. M. Goss (president), Calvin W. Rice (secretary), W. F. Durand, R. S. Moore, T. W. Ransom and C. R. Weymouth; representing the American Institute of Electrical Engineers, Ralph Davenport Mershon (president), F. L. Hutchinson (secretary), J. G. De Remer and A. M. Hunt; representing the Society of Naval Architects and Marine Engineers, Robert M. Thompson (president), D. H. Cox (secretary), Geo. W. Dickie, W. G. Dodd, Wm. R. Eckart and H. P. Frear.

The committee has effected a permanent organization, with Prof. Wm. F. Durand as chairman, and W. A. Cattell as secretary-treasurer, and has established executive offices in the Foxcroft building, San Francisco.

The ten members of the committee, consisting of the presidents and secretaries of the five national societies will constitute a committee on participation, through whom all invitations to participate in the congress will be issued. The actual management of the congress and the work of securing and publishing papers will be in charge of the members of the committee resident in San Francisco.

The papers presented at the congress will naturally be divided

into groups or sections. During the congress each section will hold independent sessions, which will be presided over by a chairman eminent in the branches of engineering covered by this section.

The scope of the congress has not as yet been definitely determined, but it is hoped to make it widely representative of the best engineering practice throughout the world, and it is intended that the papers, discussions and proceedings shall constitute an adequate review of the progress made during the past decade and an authoritative presentation of the latest developments and most approved practices in the various branches of engineering work.

Southeastern Accounting Conference.

The chairman of the Southeastern Accounting Conference has announced the appointment of the following standing committees for the ensuing year:

Committee on Efficiency.

W. D. Beymer, chairman (C. of G.); J. M. Rodgers (N. & W.); C. B. Glessner (B. & O.); F. C. Uhlman (Virginian); W. J. Baker (Old Dominion Steamship Company); R. Kemp Slaughter (A. B. & A.), and A. P. Ottarson (N. C. & St. L.).

Committee on General Accounts and Subjects.

M. F. Molloy, chairman (C. N. O. & T. P.); Joseph W. Coxe (N. & W.); Geo. Becker (L. & N.); J. W. Nokely (C. & O.); O. B. Bidwell, Jr. (Merchants & Miners Transportation Company); Wm L. Markley (N. Y. P. & N.), and H. H. Laughton (Southern Railway).

Committee on Freight Accounts.

William McGowan, chairman (B. & O.); W. D. McCaig (A. C. L.); J. V. Bryant (C. N. O. & T. P.); H. C. Carlile (N. Y. P. & N.); J. A. Robinson (Southern Railway); B. B. McCaa (S. A. L.), and H. B. Cutter (L. & N.).

Committee on Passenger Accounts.

T. H. Wright, chairman (S. A. L.); W. H. Alexander (G. & F.); L. C. Esschen (I. C.); H. M. Hood (N. O. M. & C.); W. M. Mooney (T. C.); M. T. Lanigan (W. & T.), and G. S. LeGrande (A. C. L.).

Committee on Disbursements.

J. H. McEwen, chairman (N. C. & St. L.); J. A. Muse (C. C. & O.); R. A. Williams (A. C. L.); L. B. Enslow (C. & O.); G. F. Tucker (G. & S.); R. B. Walker (S. A. L.), and A. E. Fowler (Southern Railway).

Illuminating Engineering Society.

At a meeting of the Convention Committee of the Illuminating Engineering Society held in Pittsburgh, Pa., May 16, it was decided to hold the next annual convention in that city during the week beginning September 22.

The Convention Committee consists of C. A. Littlefield, chairman, New York Edison Company; P. S. Millar, president of the society, Electrical Testing laboratories; H. S. Evans, Macbeth Evans Glass Company, Pittsburgh, Pa.; W. A. Donkin, Duquesne Light Company, Pittsburgh, Pa.; D. McFarlan Moore, General Electric Company; M. C. Rypinski, Westinghouse Electric & Manufacturing Company; C. J. Mundo, General Electric Company; J. C. McQuiston, Westinghouse Electric & Manufacturing Company; W. J. Sterrill, United Gas Improvement Company, Philadelphia, Pa.; S. B. Stewart, Philadelphia Company, Pittsburgh, Pa.; T. J. Pace, Westinghouse Electric & Manufacturing Company, and Prof. H. S. Hower, Carnegie Technical Schools.

W. D. Donkin, Duquesne Light Company, was selected as chairman of the Local Committee on Arrangements, which will have charge of the convention. J. C. McQuiston was appointed chairman of the Publicity Committee.

The program, details of which have not as yet been completed, will consist, in addition to the technical sessions, of a reception and dance, several excursion trips and visits to various industries in Pittsburgh.

Traveling Engineers' Association.

The twenty-first annual convention of the Traveling Engineers' Association will be held at the Hotel Sherman, Chicago, Ill., commencing Tuesday, August 12, 1913, and continuing four days.

The subjects to be discussed include committee reports as follows: "Uniform Instruction to Enginemen on the Handling of Superheat Locomotives," by J. W. Hardy, chairman. "Credit Due Operating Department for Power Utilization and Train Movement that Reduces the Consumption of Fuel per Ton Mile," by M. J. Howley, chairman. "The Care of Locomotive Brake Equipment on Line of Road and at Terminals, also Methods of Locating and Reporting Defects," by H. A. Flynn, chairman; also papers on the following subjects: "Advantages Obtained with the Brick Arch in Locomotives," by LeGrand Parish; "What Can We Do to Eliminate the Black Smoke Evil on Locomotives," by J. H. Lewis; "Scientific Train Loading—Tonnage Rating. The Best Methods to Obtain Maximum Tonnage Haul for the Engine over the Entire Division, Taking into Consideration the Grades at Different Points on the Division," by S. O. Beyer, Jr.

American Institute of Electrical Engineers.

At the annual meeting of the American Institute of Electrical Engineers, held in the Engineering Societies' building, New York, on Tuesday, May 20, two papers entitled Trunk Line Electrification, by Charles P. Kahler, of the Oregon Short Line, and 2400-Volt Railway Electrification, by H. M. Hobart, of the General Electric Company, were presented. Both of these papers discussed the electrification of western lines with moderate traffic and each worked out in some detail comparative examples of the cost of installation and operation by steam and by electricity. As a means of reducing the first cost, both of these papers also advocated the purchase of power from private concerns rather than the construction of separate power houses. The paper by Mr. Kahler will be printed in an early issue.

Western Railway Club.

The annual meeting and election of officers of the Western Railway Club has been postponed until May 27. There will be an entertainment, including a burlesque banquet cabaret show and the Western Railway Club's famous German band.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Boston, Mass.

AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, New York. Annual meeting, October 14-15, Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, East St. Louis, Ill. Annual meeting, June 17-20, Buffalo, N. Y.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, St. Louis, Mo.; 3d Friday of March and Sepember.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Donecker, 29 W. 39th St., New York.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOC.—George Keegan, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.

AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Convention, October 21-24, 1913, Montreal.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago. Convention, June 11-13, Atlantic City, N. J.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—A. R. Davis, Central of Georgia, Macon, Ga.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.; annual, June, 1913.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wed., except June and August, New York.

AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wenlinger, 11 Broadway, New York; 2d Tuesday of each month, New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md. Next convention, January 20-22, 1914, New Orleans, La.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago. Annual meeting, May 28, Atlantic City, N. J.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. I., Chicago. Next meeting, May, 1913, Baltimore, Md.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago. Semi-annual meeting, June 16, 1913, Atlantic City, N. J.; annual convention, October 18-24, Chicago.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 112 West Adams St., Chicago.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York.

ASSOCIATION OF WATER LINE ACCOUNTING OFFICERS.—W. R. Evans, Chamber of Commerce, Buffalo, N. Y. Annual meeting, October 8, Philadelphia, Pa.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—H. A. Neally, Joseph Dixon Crucible Co., Jersey City, N. J. Meeting with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and Aug., Montreal.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursday, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—L. S. Pomeroy, Old State Capitol building, St. Paul, Minn.; 2d Monday, except June, July, August and September, St. Paul.

ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday, Harrisburg, Pa.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, Oliver building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va. Next convention, June 18, Bluff Point, N. Y.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, rue de Louvain, Brussels, Belgium. Convention, 1915, Berlin.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, 922 McCormick building, Chicago. Annual meeting, May 21-24, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 829 West Broadway, Winona, Minn. Next convention, July 15-18, Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio. Annual meeting, August 18, Richmond, Va.

MAINTENANCE OF WAY & MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—W. G. Wilson, Lehigh Valley, Easton, Pa.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Convention, May 26-29, 1913, Chicago.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago. Convention, June 16-18, Atlantic City, N. J.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Annual meeting, September 9-12, Ottawa, Can.

NATIONAL RAILWAY APPLIANCE ASSOC.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Meetings with Am. Ry. Eng. Assoc.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.

NORTHERN RAILROAD CLUB.—C. L. Kennedy, C., M. & St. P., Duluth, Minn.; 4th Saturday, Duluth.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria; 2d Thursday.

RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxom, 2 Rector St., New York. Annual dinner, second week in December, 1913, New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec. Engrs.

RAILWAY GARDENING ASSOCIATION.—J. S. Butterfield, Lee's Summit, Mo. Next meeting, August 12-15, Nashville, Tenn.

RAILWAY DEVELOPMENT ASSOCIATION.—W. Nicholson, Kansas City Southern, Kansas City, Mo.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa. Meetings, Wednesday and Thursday, June 11-12, New York; convention, October 14, Nashville, Tenn.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio.

RAILWAY SUPPLY MANUFACTURERS' ASSOC.—J. D. Conway, 2135 Oliver bldg., Pittsburgh, Pa. Meetings with M. M. and M. C. B. Assocs.

RAILWAY TEL. AND TEL. APPLIANCE ASSOC.—W. E. Harkness, 284 Pearl St., New York. Meetings with Assoc. of Ry. Teleg. Sups.

RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. Convention, September 8-12, 1913, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.

TOLEDO TRANSPORTATION CLUB.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillsburn, N. Y. Meeting with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—Guy S. McCabe, La Salle Hotel, Chicago; meetings monthly, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library building, St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago. Annual meeting, June 17, Los Angeles, Cal.

TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y. Annual meeting, August, 1913, Chicago.

UTAH SOCIETY OF ENGINEERS.—R. B. Ketchum, University of Utah, Salt Lake City, Utah; 3d Friday of each month, except July and August.

WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—I. H. Warder, 1735 Monadnock block, Chicago; 1st Monday in month, except July and August, Chicago.

Traffic News.

The Great Northern has advised the Duluth Commercial Club of the addition of eight daily package cars from Duluth to points in Minnesota and North Dakota.

The Canadian Northern has announced that through passenger service between Chicago and Winnipeg via Duluth will be established on June 7, over the Chicago & North Western and the Chicago, St. Paul, Minneapolis & Omaha, providing a train each way every day, leaving in the morning and arriving the next morning.

Commercial travelers, in convention at Sacramento, Cal., want the State Railroad Commission to secure for them a law requiring railroads to carry aliens in separate cars, the same as negroes are carried in some of the southern states. The drummers say that their health is imperiled by the presence of objectionable aliens in first class cars.

The federal grand jury at East St. Louis, Ill., on May 16 returned five indictments charging rebating and discrimination in 63 counts against the Vandalia, the Cleveland, Cincinnati, Chicago & St. Louis, the Chicago, Indiana & Southern, the Grand Trunk and the O'Gara Coal Company which is said to have received the benefit of the discriminations. There are three counts against the Vandalia, 20 against the Big Four and 20 against the Big Four and the Chicago, Indiana & Southern jointly. The Grand Trunk and the coal company are charged in 20 counts jointly with receiving and granting unlawful concessions.

R. B. Shimer & Company, commission merchants, have been indicted by the federal grand jury at New York on the charge of soliciting and receiving information from a railroad agent concerning shipments of freight belonging to other parties, without the consent of either shipper or consignee. The case refers to shipments of eggs over the Baltimore & Ohio, received in New York last year. An agent of the road gave information as to the names of the shippers. The Interstate Commerce law, section 15, paragraph 6, makes an offense of this kind a misdemeanor and imposes a fine of not more than $1,000. H. C. Shimer, head of the firm, gave bail in $2,000.

The latest agricultural enterprise reported by a railroad is that of the New York, New Haven & Hartford in establishing a mill, at West Stockbridge, Mass., to grind lime for the benefit of the farmers of western Massachusetts and Connecticut. Representatives of the industrial bureau maintained by the road, learning that one of the principal needs of the soil in New England was lime, cast about for a supply of that article; and they found that the extensive deposit near West Stockbridge was of a suitable character. The Grangers' Lime & Marble Company has been organized, with Wilson H. Lee as president. Mr. Lee is vice-president of the state board of agriculture. It is proposed to sell ground lime at $1.50 a ton, and they expect to turn out 40,000 tons a year. This, however, is only a beginning; the farmers along the New Haven lines could make good use of 700,000 tons a year.

INTERSTATE COMMERCE COMMISSION.

The commission has suspended from May 7 until November 7 the schedules in a supplement to Agent M. P. Washburn's tariff, which proposed to advance rates on ground iron ore from points in Alabama, Georgia and Tennessee to Boston, Mass., New York, N. Y., and Philadelphia, Pa.

The commission has suspended from April 23 until July 17 certain schedules in certain supplements to the tariff of the Norfolk & Western, which cancel existing through rates applicable to tanning extract from Lynchburg, Va., to points located on the Bangor & Aroostook.

The commission has suspended until September 11 the supplement to Agent F. A. Leland's tariff, which proposed to advance rates for the transportation of calves from Refugio, Tex., to New Orleans, La., and St. Louis, Mo., from 44½ and 52½ cents per 100 lbs., respectively, to 60 cents per 100 lbs., with a minimum carload weight of 17,000 lbs.

The commission has suspended until August 16 the schedules in certain tariffs, which proposed to cancel through joint rates (both class and commodity) now in effect from and to stations located on the Kansas City & Memphis and points located on or reached via the St. Louis & San Francisco, providing that combination would be applicable, which would have resulted in material advances.

The commission has suspended from April 25 until August 23 the operation of the supplement to the tariff of the St. Louis & San Francisco which, by the cancellation of through joint rates leaving in effect combination rates, advances rates for the transportation of lumber and articles manufactured therefrom, in carloads, from points in Arkansas and Missouri to points in Iowa, Minnesota and other States. The increases amount to about 2 cents per 100 lbs. in all instances.

Rates on Glass Sand Reduced.

Charles Boldt Company v. Chicago, Rock Island & Pacific et al. Opinion by the commission:

In this case the complainant contends that the rate of $1.80 per ton for the transportation of glass sand in carloads from Ottawa, Ill., to Cincinnati, Ohio, is unreasonable. Reparation is asked. The commission decided that the rate in question was unreasonable to the extent that it exceeds $1.60 per 100 lbs., but that as the rate of $1.80 per 100 lbs. had not been unreasonable in the past, no reparation should be awarded. (27 I. C. C., 11.)

Joint Rates on Lumber Cancelled.

In re investigation and suspension of lumber rates from Mississippi to eastern points. Opinion by Chairman Clark:

The commission decided that the cancellation of joint rates on lumber from points on the Gulf & Ship Island and New Orleans Great Northern via the Illinois Central to points in eastern Trunk Line territory, eastern Canada and New England should be permitted, as other through routes and joint rates via shorter and more direct lines were provided, and as no increased charges to the shippers or receivers were involved. (27 I. C. C., 6.)

Reparation Awarded.

Central Coal & Coke Company v. Missouri & Louisiana et al. Opinion by Commissioner Prouty:

In this case the complainant asks for reparation on its shipments of coal over the lines of the defendant from coal mines near Bonanza, Ark., to destinations in Oklahoma, Missouri, Iowa, Kansas and Nebraska during the period between September 26, 1910, and February 27, 1911, during which time the defendants failed to maintain joint rates. The prayer of the complainant was granted. (27 I. C. C., 40.)

Express Package Incorrectly Marked.

Parlin & Orendorff Plow Company of St. Louis v. United States Express Company. Opinion by the commission:

An express package, on which an incorrect destination was marked by the shipper, was offered for transportation with receipt already filled out by shipper and showing correct destination. Carrier before signing receipt changed destination shown thereon to agree with that marked on package, and then transported the package to the latter destination. The commission decided that the carrier in issuing receipt was not bound to call attention to the change in destination and should not be required to return the goods without charges. (26 I. C. C., 561.)

Rates on Logs Reduced.

Memphis Freight Bureau v. Illinois Central et al. Opinion by the commission:

The complainant contends that the rate of 13 cents for the transportation of logs from Pearson, Miss., to Memphis, Tenn., is unreasonable. Reparation is asked. The commission decided that the through rate of 13 cents per 100 lbs. was unreasonable to the extent that it exceeded a combination of intermediate rates amounting to 9.25 cents, consisting of the initial carrier's local rate of three cents from Pearson to Jackson and a distance rate of the Illinois Central from Jackson to Memphis. The commission ordered that in future the rate from Pearson to Memphis should not exceed by more than three cents per 100 lbs. the local rate from Jackson to Memphis. Reparation was awarded. (27 I. C. C., 1.)

Middlesboro, Ky., Discriminated Against.

Middlesboro, Ky., Board of Trade v. Louisville & Nashville et al. Opinion by the commission:

The commission decided that Middlesboro, Ky., was discriminated against in favor of Jellico, Tenn., by the Southern Railway in its class rates from Birmingham, Ala., and other southeastern points, and ordered that in future the rate to Middlesboro from the points in question should not exceed the rates to Jellico from the same points. The commission also decided that the class rates, water and rail, from New York and other eastern points, and the all-rail rates from the Ohio river crossings to Middlesboro were unreasonable as compared with the rates from the same points to Jellico. The commission prescribed reasonable rates for the future. While no testimony specifically affecting the commodity rates was introduced, those rates should be readjusted to conform to the findings in this case, as should also the rates from the interior eastern cities as shown in Agent Ryan's tariffs. Reparation was denied (27 I. C. C., 14.)

Ice Rate Reduced.

People's Fuel & Supply Company v. Grand Trunk Western et al. Opinion by Chairman Clark:

In this case the complainant contends that the rate on ice from Silver Lake, Wis., to Chicago is unreasonable. Reparation is asked. The shipments moved from Silver Lake to Hawthorne, Ill., over the line of the Minneapolis, St. Paul & Sault Ste. Marie; from Hawthorne to Elsdon over the Illinois Northern; and from Elsdon to the plant of the complainant at Chicago over the Grand Trunk Western. Prior to August 1, 1911, the switching charge of the Grand Trunk on ice from the Soo line was $3 per car irrespective of weight, and this amount was absorbed by the Soo line when its revenue for the line haul equaled or exceeded $15 per car. On August 1, 1911, the Grand Trunk Western increased its rate for its share of the service and on November 15, 1911, again increased its rate to a minimum of $9 per car. The through rate was increased by this action of the Grand Trunk Western as the Soo line refused to absorb more than $3 per car. No evidence was introduced to prove the reasonableness of the increases and the commission decided that the present rate was unreasonable to the extent that it exceeded the rate in effect prior to August 1, 1911. Reparation will be awarded. No order was deemed necessary. (27 I. C. C., 24.)

Lumber Rates Reduced.

Michigan Hard Wood Manufacturers' Association et al v. Transcontinental Freight Bureau et al. Opinion by Commissioner Prouty:

In the original case, 22 I. C. C., 387, the commission decided that the rate of 85 cents per 100 lbs., for the transportation of hard wood lumber from the mills of the complainants to Pacific coast terminals was unreasonable, and that a rate of 80 cents per 100 lbs., for this service would be reasonable. The commission understood that the mills of all the complainants were included in the southern portion of the southern peninsular of Michigan, and awarded reparation on shipments from that territory. The complainants filed a petition for rehearing saying that their petition had related to the entire southern peninsula of Michigan, and that no good reason existed why the same rate which applied to the territory named in the opinion should not also be extended to the more northerly territory in which were situated many of the mills of the complainants. The commission decided that its opinion had been rendered under a misconception and granted a rehearing. The commission decided that the 80-cent rate should apply to the entire southern peninsula and that reparation should be awarded on shipments from all mills in that region on the same basis. A voluntary association can not by claiming reparation generally in behalf of its members interrupt the running of the statute of limitations as to those members. In this case the association filed the complaint in behalf of certain of its members who are specifically named, and also in behalf of certain other indi-

viduals not members of the association who are also named. The commission decided that this was in substance a petition by the firms and individuals whose names are given and the case should be treated as though those persons were described as petitioners. The complaint contains no explicit statement that the complainants made shipments under the 85-cent rate, but alleges that they are shippers of hard wood lumber between the points named, that an extensive business had been built up under the 75-cent rate, which business had been injured and its existence imperiled by the 85-cent rate; and asks for a refund. The commission found that this petition is simply a filing of the claims of those firms and individuals named and will interrupt the running of the statute from the date when the petition was filed. The original petition claimed reparation from August 1, 1908, but subsequently complainants asked reparation from January 1, 1905 when the 85-cent rate became effective. This cannot be permitted. All the original complainants are entitled to reparation with respect to shipments subsequent to August 1, 1908; and the five complainants not mentioned in the original proceeding whose claims were first filed September 19, 1912 are entitled to reparation on shipments subsequent to September 19, 1910. The defendants claim that as the complainants increased the price of their lumber by the amount of the increase in the transportation charge, they have suffered no damage. The complainants assert that in subsequent settlement between the consignees and themselves, the freight money was in all cases repaid to the consignees. The commission decided that reparation would be awarded when the complainants had proved that they had refunded the amount of the freight charges. (*27 I. C. C., 32.*)

STATE COMMISSIONS.

The Wisconsin Railroad Commission has ordered a general reduction of 20 per cent. in the rates for transportation of merchandise by express, to go into effect in 20 days. The hundred pound basing rates are considerably altered and the graduate scales on which the charges for the various weights are computed are completely changed.

COURT NEWS.

The appellate division of the supreme court, in one of the suits against the Delaware & Hudson growing out of the issuance of fradulent bills of lading two or three years ago, has decided in favor of the road. In this suit, that of Kausch, assigned to Williams, the lower court had given the plaintiff a verdict of $90,711; but this is now reversed. It is expected that Williams will appeal to the higher court. Other suits, aggregating $650,000, are pending against the road. Oliver, one of the men tried as a principal in the crimes connected with these bill-of-lading transactions, has never been convicted but he is now under indictment in New York county. Palmer, the freight agent who was implicated, was convicted but has never been sentenced.

The decision of the supreme court of the United States, holding the Norfolk & Western liable for damages on a shipment of tobacco when the damages occurred on the boat of the Old Dominion Steamship Company, was reported in the *Railway Age Gazette*, May 16, page 1109. The bill of lading in this case bore the usual stipulation that no carrier should be liable for damages occurring beyond its own line, the company resting its claim for the justification of this stipulation on the fact that its action in giving a through rate was involuntary. In the Virginia State court the decision against the road had been based on the ruling of the supreme court in an earlier case where there was a presumption that the carrier was a voluntary party to a through route and rate, whereas in the present case the Norfolk & Western had not formed any through route with the Old Dominion. Being required by the statute to give a through bill of lading was claimed to be the same as having its property taken without due process of law. But the decision, by Mr. Justice Holmes, shows that in the earlier cases, depended on by the Virginia court, the supposed through routes were only presumed. The present case goes against the Norfolk & Western on the ground that there is no substantial distinction between this and the earlier cases.

Railway Officers.

Executive, Financial and Legal Officers.

Frank J. Lawlor has been appointed acting treasurer of the Chicago, Terre Haute & Southeastern, with headquarters at Chicago, succeeding E. F. Young, retired.

Bruce Wyman, professor of law at Harvard University, has been engaged by the New York, New Haven & Hartford as consulting counsel in matters affecting interstate commerce.

Edward Francis Kearney, who has just been elected first vice-president of the Texas & Pacific, in charge of maintenance, operation and traffic, with headquarters at New Orleans, La., and Dallas, Tex., was born March 27, 1865, at Logansport, Ind. He was educated in the public schools and began railway work in 1882 as telegraph operator for the Pennsylvania Lines, and was subsequently freight clerk, chief operator superintendent's office, train despatcher and trainmaster's clerk and chief clerk to superintendent, until December, 1899, when he was made trainmaster at Indianapolis, Ind. In February, 1903, he went to St. Louis, Mo., as superintendent of the Terminal Railroad Association and St. Louis Merchants' Bridge Terminal Railway. One year later he left to become supervisor of mails of the Chicago, Rock Island & Pacific, and two months afterwards was appointed general superintendent of transportation of the St. Louis & San Francisco, resigning in October. Mr. Kearney went to the Missouri Pacific in April, 1905, as superintendent of terminals at St. Louis, and on February 15, 1908, was made superintendent of transportation of that road and the St. Louis, Iron Mountain & Southern. He was promoted to general superintendent of transportation of the Missouri Pacific system, in January of this year, and now assumes the vice-presidency of the Texas & Pacific, as above noted.

E. F. Kearney.

Operating Officers.

J. A. Somerville, superintendent of transportation of the Missouri Pacific and the St. Louis, Iron Mountain & Southern, with office at St. Louis, Mo., will assume the duties and authority of E. F. Kearney, who recently resigned as general superintendent of transportation.

J. F. Keegan, superintendent of the Monongah division of the Baltimore & Ohio, at Grafton, W. Va., has been appointed superintendent of the Chicago division, with headquarters at Garrett, Ind. J. M. Scott, assistant superintendent of the Cumberland division at Keyser, W. Va., succeeds Mr. Keegan, with headquarters at Grafton, and M. H. Cahill, who recently resigned as superintendent of the Buffalo division of the Delaware, Lackawanna & Western, succeeds Mr. Scott.

Traffic Officers.

H. W. Stoutenborough has been appointed assistant general freight and passenger agent of the Bingham & Garfield, with headquarters at Salt Lake City, Utah.

H. C. Bush has resigned as traffic manager of the Colorado Midland and the office is abolished. L. C. Rafert, chief clerk in the freight department, has been appointed general freight agent, with headquarters at Denver, Colo.

G. Z. Phillips, general passenger agent of the Baltimore Steam Packet Company, Baltimore, Md., has been appointed assistant general passenger agent of the Seaboard Air Line, with headquarters at Jacksonville, Fla., effective June 1.

W. G. Barnwell, general freight agent of the Atchison, Topeka & Santa Fe Coast Lines, with headquarters at Los Angeles, has been appointed assistant freight traffic manager, with office at San Francisco, Cal., succeeding Edward Chambers, promoted. H. P. Anewalt, assistant general freight agent at San Francisco, succeeds Mr. Barnwell. Effective June 1.

C. E. Perkins, general freight agent of the St. Louis, Iron Mountain & Southern, at St. Louis, Mo., has been appointed assistant general traffic manager, a new position. The office of assistant to general traffic manager has been abolished and A. T. Stewart has been appointed general freight agent of the Missouri Pacific, with office at Kansas City, succeeding K. M. Wharry, resigned. E. H. Calef, assistant general freight agent at St. Louis, has been appointed general freight agent of the St. Louis, Iron Mountain & Southern, succeeding Mr. Perkins. W. I. Jones, assistant general freight agent of the Missouri Pacific and the St. Louis, Iron Mountain & Southern, in charge of coal traffic, has been appointed assistant general freight agent in charge of solicitation of outside agencies and interchange, succeeding J. B. Trimble, assigned to other duties, all effective June 1.

Ralph C. Caples, general agent of the traffic department of the New York Central Lines, with headquarters at New York, has been appointed general traffic manager of the Western Maryland, with headquarters at Baltimore, Md. He was born on December 23, 1872, at Fostoria, Ohio, and was educated at Oberlin College, Oberlin, Ohio, also at Northwestern University, Evanston, Ill., and in 1896 entered Princeton University, Princeton, N. J. Previous to this, at the age of 18, he became yard clerk on the Lake Erie & Western, at Fostoria; the following year was advertising agent of the New York, Chicago & St. Louis, and in 1892 he became traveling passenger agent for the Mobile & Ohio. After leaving college he was passenger agent of the Delaware, Lackawanna & Western at New York, and then for two years was general passenger agent of the Detroit & Lima Northern, now a part of the Detroit, Toledo & Ironton. During 1900 and 1901 he was general manager at Tampa, Fla., of the Florida West Coast Transportation Company, operating a line of steamers. In 1907 he entered the service of the New York Central & Hudson River, and in May of that year was made special representative of that road. In February, 1909, he was promoted to general agent of the traffic department, covering all New York Central Lines both east and west of Buffalo, N. Y., and leaves that position on June 1, to become general traffic manager of the Western Maryland as above noted.

R. C. Caples.

Engineering and Rolling Stock Officers.

F. E. Hutchison has resigned as electrical engineer of the Chicago, Rock Island & Pacific.

George Peck has been appointed roadmaster of the Canadian Pacific at the Calgary, Alta., terminals, in place of T. Bradshaw, transferred.

M. C. Blanchard, division engineer of the Atchison, Topeka & Santa Fe, at Topeka, Kan., has been appointed office engineer at Topeka, in place of K. B. Duncan, promoted.

L. J. Putnam, division engineer of the Chicago & North Western at Boone, Iowa, has been appointed principal assistant engineer, with headquarters at Chicago. M. E. Thomas, division engineer of the Minnesota and Dakota divisions at Winona, Minn., succeeds Mr. Putnam as division engineer of the East and West Iowa, and Iowa and Minnesota divisions at Boone. Mr. Thomas is succeeded by W. J. Jackson, division engineer of the Madison division at Madison, Wis., and Lee Jutton takes the place of Mr. Jackson.

P. Alquist, who has been appointed superintendent of the car department of the Missouri, Kansas & Texas, with office at Sedalia, Mo., as announced in last week's issue, was born in Stockholm, Sweden, in 1874. Mr. Alquist came to this country in 1885, settling at Memphis, Tenn. He started his railroad career as car repairer for the Illinois Central at Memphis in the early part of 1895, working for the same road as car interchange inspector, rip track foreman, assistant general foreman, and general foreman of the car department of the Memphis, Mississippi and Fulton divisions until 1910, when he left to go with the Cincinnati, Hamilton & Dayton as general foreman of the car department at Lima, Ohio. He left that road after about eighteen months' service to go to the Pere Marquette as general car foreman at Grand Rapids, Mich., general inspector and chief inspector of car department respectively, until his recent appointment as superintendent of car department of the Missouri, Kansas & Texas, succeeding W. A. Mitchell, who was master car builder. The office of master car builder has been abolished. Mr. Alquist was vice-president of the chief interchange inspection association at Toledo, Ohio.

P. Alquist.

Kenneth B. Duncan, whose appointment as engineer of Gulf lines of the Gulf, Colorado & Santa Fe, with headquarters at Galveston, Tex., has already been announced in these columns, was born September 5, 1878, at Princeton, Ind. He was graduated from Purdue University in 1902. Mr. Duncan began railway work in November, 1899, with the Cleveland, Cincinnati, Chicago & St. Louis at Mt. Carmel, Ill., and with the exception of two winters spent at Purdue University, remained with that road until June, 1902. He was then with the U. S. Department of Agriculture, engaged in drainage investigations at Fresno, Cal., until February, 1903, when he went to the Gulf, Colorado & Santa Fe as draftsman at Galveston. From July, 1904, to June, 1905, he was an instructor in civil engineering at Purdue University, and the following three years he was with the Houston & Texas Central successively as topographer, on location, resident engineer and division engineer on construction. Mr. Duncan returned to the Gulf, Colorado & Santa Fe in June, 1908, and for three years was assistant to the chief engineer at Galveston, leaving in June, 1911, to become office engineer of the Atchison, Topeka & Santa Fe at Topeka, Kan., which position he held until his promotion on May 1 as engineer of the Gulf lines of the Gulf, Colorado & Santa Fe, as above noted.

K. B. Duncan.

Morgan K. Barnum, who has resigned as general superintendent of motive power of the Illinois Central and the Yazoo & Mississippi Valley, was born on April 6, 1861. He graduated from Syracuse University in 1884 with the degree of A. B. and later received the degree of A. M. He began railway work the year he graduated as a special apprentice in the shops of the New York, Lake Erie & Western, now the Erie, at Susquehanna, Pa. He was then consecutively machinist and mechanical inspector and later general foreman of the same road at Salamanca, N. Y.; general foreman of the Louisville & Nashville shops at New Decatur, Ala.; assistant master mechanic of the Atchison, Topeka & Santa Fe at Argentine, Kan.; superintendent of shops at Cheyenne, Wyo.; district foreman at North Platte, Neb., and then division master mechanic at Omaha, Neb., on the Union Pacific; assistant mechanical superintendent on the Southern Railway, and in February, 1903, he was made superintendent of motive power of the Chicago, Rock Island & Pacific, and in April of the next year was made mechanical expert of the Chicago, Burlington & Quincy. In 1907 he was appointed general inspector of machinery and equipment of the same road. He left that road in April, 1910 to become general superintendent of motive power of the Illinois Central and the Yazoo & Mississippi Valley, from which position he has just resigned.

M. K. Barnum.

L. J. Putnam who has been appointed principal assistant engineer of the Chicago & North Western, with office at Chicago, was born on February 17, 1878, at Manchester, Iowa. He was educated at Cornell College, Mount Vernon, Iowa, receiving the degree of B. S. in civil engineering in 1903, and of C. E. two years later. He began railway work in June, 1898, with the Illinois Central; and in June of the following year went with the Chicago & North Western as an instrument man, and he has been with that road ever since. From February, 1901, to March, 1906, he was assistant engineer on construction, location and maintenance, and was then made acting division engineer of the Ashland division at Kaukauna, Wis. From March, 1907, he was consecutively assistant engineer in charge of second track and terminal improvements at Janesville, Wis., assistant engineer in charge of the bascule bridge over the north branch of the Chicago river and of the Wells street yard at Chicago; resident engineer of the Milwaukee track elevation; resident engineer of the Escanaba ore dock construction; and from July, 1910, to April 1, 1912, he was with the Milwaukee, Sparta & North Western, the new line of the Chicago & North Western across Wisconsin, first as resident engineer on construction, and then as acting resident engineer. On April 1, 1912, he was promoted to division engineer at Boone, and now becomes principal assistant engineer of the same road as above noted.

L. J. Putnam.

Robert W. Bell, superintendent of machinery of the Illinois Central at Chicago, has been appointed general superintendent of motive power of the Illinois Central and the Yazoo & Mississippi Valley, with headquarters at Chicago, succeeding M. K. Barnum, resigned. Joseph H. Nash, superintendent of the Burnside shops, has been appointed superintendent of motive power for the Illinois Central lines north of the Ohio river, with headquarters at Chicago, and Frank B. Barclay, master mechanic at McComb, Miss., has been appointed superintendent of motive power of the Illinois Central lines south of the Ohio river, and of the Yazoo & Mississippi Valley, with headquarters at Memphis, Tenn., all effective June 1.

Purchasing Officers.

G. E. Scott has been appointed assistant purchasing agent of the Missouri, Kansas & Texas System, with headquarters at St. Louis, Mo., effective May 15.

OBITUARY.

William Edward Davis, passenger traffic manager of the Grand Trunk and the Grand Trunk Pacific, with headquarters at Montreal, Que., died on May 15, at Vaudreuil, near Montreal. He was born on August 2, 1850, at Wilson, Niagara county, N. Y., and began railroad work in 1868, as a clerk on the Hannibal & St. Joseph, now a part of the Chicago, Burlington & Quincy. From 1873 to 1877, he was with the Kansas City, Fort Scott & Gulf, now a part of the Frisco system, and in August, 1877, he entered the service of what is now a part of the Grand Trunk system, then known as the Chicago & Lake Huron. This company afterwards passed to the control of the Grand Trunk and is now what is officially known as the Grand Trunk Western. He was subsequently to April 1, 1896, assistant general passenger agent of the Grand Trunk and then to May, 1900, was general passenger and ticket agent of the same road at Montreal. On May 1, 1900, he was appointed passenger traffic manager of the entire system and at the time of his death was also passenger traffic manager of the Grand Trunk Pacific.

W. E. Davis.

Henry Schlacks, formerly superintendent of machinery of the Denver & Rio Grande, died on May 16, at Chicago, aged 73 years. Mr. Schlacks was born November 25, 1839, at Daun, Rhine Province, Germany. He began railway work in August, 1855, as machinist apprentice at the Weldon shops of the Illinois Central, and after completing his apprenticeship was machinist for that road until June, 1865. He was then with the Chicago, Rock Island & Pacific from June, 1866, to January, 1873, successively as foreman erecting shop, foreman machine shops and general foreman. On the latter date he returned to the Illinois Central as master mechanic, and from November, 1882, to February, 1893, was superintendent of machinery of that road. In December, 1893, Mr. Schlacks became superintendent of machinery of the Denver & Rio Grande, resigning in August, 1902. Mr. Schlacks was the father of Charles H., vice-president of the Western Pacific; Henry J., an architect in Chicago; Joseph T., vice-president of the McCord Manufacturing Company, Detroit, Mich.; William J., with McCord & Company, Chicago; Edward L., in the coal business in Nebraska, and Robert J., manufacturers' agent in Denver, Colo.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

The Texas Midland has ordered 2 consolidation locomotives from the American Locomotive Company. These locomotives will be equipped with superheaters, will have 22 in. x 28 in. cylinders, 56 in. driving wheels and in working order will weigh 190,000 lbs.

The Atlanta, Birmingham & Atlantic, mentioned in the *Railway Age Gazette* of January 31 as being in the market for 5 locomotives, has ordered this equipment from the Baldwin Locomotive Works. These locomotives will be equipped with the Baker valve gear.

The New York Central Lines have ordered 45 locomotives from the American Locomotive Company and 10 switching locomotives from the Baldwin Locomotive Works in addition to the 124 locomotives recently ordered and mentioned in the *Railway Age Gazette* of May 9.

CAR BUILDING.

The Hocking Valley has ordered 1,000 coal cars from the Ralston Steel Car Company.

The Bethlehem Steel Company, South Bethlehem, Pa., will soon place orders for about 50 freight cars.

The Seaboard Air Line will soon place orders for 10 seventy-foot steel coaches, and 5 seventy-two-foot steel dining cars.

The Great Northern has ordered 20 baggage cars, 25 coaches, 25 combination mail and baggage cars and 2 mail cars from the American Car & Foundry Company.

The Erie has ordered 1,000 hopper cars from the Pressed Steel Car Company, 1,500 box cars from the American Car & Foundry Company, 1,500 box cars, 500 hopper cars and 500 gondola cars from the Standard Steel Car Company.

IRON AND STEEL.

The Atchison, Topeka & Santa Fe has ordered 15,000 tons of rails from the Illinois Steel Company.

The Missouri, Kansas & Texas has ordered 175 tons of structural steel from the American Bridge Company.

The Chicago, Burlington & Quincy has ordered 225 tons of structural steel from the American Bridge Company.

SIGNALING.

The New York, Ontario & Western has adopted green for the night clear indication in fixed signals and yellow for caution; and has changed the colors of signal blades also, following in general the standards in force on the New York, New Haven & Hartford. Heretofore, automatic signals had blades with square ends and train order signals had pointed blades. The accepted standard has now been made universal throughout the length of the company's lines; automatic block signal arms, pointed; distant signal arms, fish-tail, and painted yellow; train order signals with rounded ends. On this road there are a considerable number of automatic signals, controlled by track circuits, in isolated sections, not making a complete block system. These have now all been made caution signals. Several different gangs of men were employed and the changes were made throughout the line on the same day. The color of switch targets and lights was also changed at the same time.

Railway Surveys in Brazil.—The President of Brazil has signed a decree authorizing $65,000 for expenses in the definite surveys of a railway from Coroata, in the State of Maranhao, to the right bank of the Rio Tocatins, and a decree approving the definite surveys and estimates amounting to $1,600,000 of the last section (97 miles) of the Campo Maior to Anarracao branch.

Supply Trade News.

The Pilliod Company, New York, has moved its offices from room 1823, 30 Church street, to room 829 in the same building, where larger floor space has been secured.

George D. Rosenthal, manager of the St. Louis, Mo., office of the General Electric Company, Schenectady, N. Y., died in New York on May 19. Mr. Rosenthal had been with the company for over 20 years.

The Engineering Construction Company has been organized, with offices at 106 North LaSalle street, Chicago, to do a general engineering and contracting business. The officers are: I. J. Crowley, general manager; E. A. Clark, chief engineer, and Jas. X. Gunning, secretary and treasurer.

J. W. Cleary, one of the oldest electric headlight men in the country, who joined the forces of the National Electric Headlight Company in Indianapolis in 1891, and in 1899 became associated with the Pyle-National Electric Headlight Company, Chicago, as traveling engineer, has resigned his position and will go abroad for several months.

The American Blower Company, Detroit, Mich., announces that William C. Redfield, having been appointed a member of President Wilson's cabinet, has deemed it advisable to terminate his business connections, and therefore has resigned as vice-president and director, and has retired from active participation in the management of the company.

TRADE PUBLICATIONS.

Water Power Plants.—The Stone & Webster Engineering Corporation, Boston, Mass., has published an illustrated booklet entitled Water Powers, giving brief data regarding various water power plants constructed by this corporation. Of the 12 plants described, six are for companies managed by the Stone & Webster Management Association, and six are for companies which are not in any way affiliated with the Stone & Webster organization.

Rolled Steel Wheels.—This is the title of a 56 page catalog just issued by the Standard Steel Works Company, Philadelphia, Pa. The book is very completely illustrated and includes dimensioned drawings of rolled steel wheels for all classes of service together with complete specifications. For the guidance of purchasers, data and dimensioned drawings of the standard axles of the Master Car Builders' and Master Mechanics' Associations are also given.

Asbestos Metal.—The Asbestos Protected Metal Company, Beaver Falls, Pa., is publishing a series of illustrated bulletins giving general descriptions of Asbestos Protected Metal which is designed to meet the demand for an economical roofing and siding material which will incur only small maintenance cost. The booklets include estimating data and descriptions of Asbestosteel, concrete roof and floor construction and Asbestosteel, lath wall and ceiling construction.

New Line for Norway.—A short railway is to be constructed connecting Aalgaard with the present Stavanger-Egersund Railroad. It will be the first branch line to penetrate the mountainous region, although requiring no difficult engineering feat, for its roadbed will lie in one of the valleys. According to the estimates announced on April 9 by the engineer who has made the preliminary survey, the line will be 8¼ miles in length, have a maximum grade of 2 per cent, and will cost approximately $275,000. There is a possible alternative preliminary survey, hence the exact location of the right of way will not be determinated until about the last week in May. As this proposed line to connect Aalgaard with the present Stavanger-Egersund Railroad is a government project any inquiries should be addressed to the Bureau of National Railways, Christiania, Norway.

Railway Construction.

CALIFORNIA, SHASTA & EASTERN.—This company which was recently incorporated in California with $600,000 capital, has secured control of the Anderson & Bella Vista, formerly the Terry Railroad, a lumber line, 16 miles long, and plans to rebuild the road and to build an extension to Ingot, 12½ miles.

CANADIAN PACIFIC.—See Toronto, Ont., under Railway Structures.

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—The new second main track between Citico, Tenn., and Boyce, just out of Chattanooga, has been completed and was put in service on May 15. The company is now at work on 29.6 miles of second track between Erlanger, Ky., and Williamstown. (June 21, p. 1589.)

GLENGARRY & STORMONT.—An officer of this company writes that the line will probably be built, from St. Polycarp Junction, Que., on the Canadian Pacific via Williamstown to Cornwall, 30 miles. The work will involve handling about 10,000 cu. yds. a mile. There will be three steel bridges, each to have a 100 ft. span. The company expects to develop a traffic in agricultural products, cotton goods and furniture. C. L. Hervey, chief engineer, 400 St. James street, Montreal, Que. (April 11, p. 863.)

HUDSON RIVER CONNECTING.—See New York Central & Hudson River.

LAKE ERIE & NORTHERN.—An officer writes that the general contract has been given to Johnson Bros., Brantford, Ont., and work is now under way on the line from Galt, Ont., to Paris, Brantford, Simcoe and Port Dover on Lake Erie, 53 miles. The company expects to begin tracklaying in July, and to develop a traffic in coal and manufactured articles. W. P. Kellett, chief engineer, Brantford. (May 2, p. 1013.)

LOGAN RAPID TRANSIT COMPANY.—See Ogden Rapid Transit.

MATADOR & NORTHERN.—Organized in Texas to build from a point on the Quanah, Acme & Pacific to Memphis, Tex., about 75 miles. It is understood that the first division will be built at once, and it is planned to eventually extend the line north from Memphis to Canadian, an additional 100 miles, where connection is to be made with the Santa Fe. The headquarters of the company are at Matador.

MINNESOTA & INTERNATIONAL.—An officer is quoted as saying that the company is planning to build a cut-off from Leaks, Minn., southwesterly to a connection with the main line of the Northern Pacific at a point just west of the Northern Pacific hospital, about 5.8 miles, to provide an easier entrance into Brainerd. It is expected that the work will be started soon.

MONTEZUMA SAN JUAN SOUTHERN.—An officer writes that the company has been incorporated in Colorado with $4,000,000 capital, and surveys will be started at once. Financial arrangements are being made with Baron Ludwig de Leopold, Paris, France. The plans call for building via Cortez, Colo., south to Fruitland, N. Mex., thence to Grants, where connection is to be made with the Santa Fe, about 200 miles. It is expected that contracts for building the line will be let in about four months. There will be one steel bridge, also terminal stations. G. O. Harrison, president, and Emil Stein, general manager, Cortez. (April 18, p. 925.)

MUSKOGEE & MISSOURI PACIFIC CONNECTING.—Incorporated in Oklahoma to build an 8-mile line from Muskogee, Okla., to a point on the St. Louis, Iron Mountain & Southern, two miles south of Ft. Gibson. Former Governor Joseph Haskell and J. Hall are incorporators.

NEW YORK CENTRAL & HUDSON RIVER.—The New York Public Service Commission, Second district, recently held a hearing upon the application of the Hudson River Connecting for permission to construct a line from Stuyvesant, Columbia county, N. Y., to Fuera Bush, Albany county, with two branches, also to issue $250,000 capital stock, and upon the application of the New York Central & Hudson River to purchase the capital stock of the Hudson River Connecting. (April 11, p. 863.)

NEW YORK, NEW HAVEN & HARTFORD.—The Connecticut legislature has passed a bill authorizing the Westchester Northern to build and operate a line in Connecticut. The plans call for building from White Plains, N. Y., to Danbury, Conn. The company has a New York charter and asked for the right to build and operate in Connecticut. (October 11, 1912, p. 710.)

OGDEN RAPID TRANSIT.—An officer writes that the Logan Rapid Transit Company is now building an extension south about 12 miles to Wellsville, Utah, and arrangements are being made to build a connection from the Ogden Rapid Transit at Brigham north to Wellsville, a distance of from 16 to 25 miles, according to the route selected. Arrangements are also being made to build an extension of the L. R. T. north via Lewiston to Preston, Idaho.

TEXAS ROADS.—Plans are being made by residents of Ennis, Tex., to build a line, it is said, from Ennis to a connection with the Trinity & Brazos Valley, either at Bardwell or at Emhouse. A bonus of $30,000 is being raised by residents of Ennis in aid of the project. E. M. Thomas, A. L. Berge and E. Raphael, of Ennis, are interested.

WESTCHESTER NORTHERN.—See New York, New Haven & Hartford.

WEST TENNESSEE TRACTION.—An officer is quoted as saying that financial arrangements are about completed to build this line. The plans call for building from Memphis, Tenn., northwest via Brownsville to Jackson, 86 miles. D. T. Bennett, president; D. G. Sargent, vice-president and general manager, Memphis. (January 24, p. 191.)

RAILWAY STRUCTURES.

BLOOMINGTON, ILL.—The Chicago & Alton has awarded a contract to Westinghouse, Church, Kerr & Company, for the construction of a machine shop and other buildings.

CHICAGO, ILL.—The Minneapolis, St. Paul & Sault Ste. Marie has announced that the new freight terminal being built on the west side of Chicago by the Central Terminal Railway will be completed by January 1, 1914.

DULUTH, MINN.—The Minneapolis, St. Paul & Sault Ste. Marie has announced that its roundhouse at this point is to be enlarged from a 12-stall to a 20-stall structure.

EOLA, ILL.—The Chicago, Burlington & Quincy has announced that approximately $700,000 will be expended in the construction of a large freight yard at this point. Ten tracks will be completed this year, and others will be added later.

LAKE JUNALUSKA, FLA.—The Southern Railway is putting up a passenger station at Lake Junaluska, formerly Tuscola, which is three miles east of Waynesville. The contract for the construction work has been let to the Melton Construction Company, Greensboro, N. C. A small freight house is also being put up by the railway company's forces.

MEMPHIS, TENN.—A contract for the construction of the union passenger station to be used by the Illinois Central, Chicago, Rock Island & Pacific and St. Louis & San Francisco, has been awarded to the James Alexander Construction Company, of Memphis.

TORONTO, ONT.—An officer of the Canadian Pacific writes that the north Toronto grade separation work includes the elevation of over 3 miles, to be mostly five track, necessitating the contraction of 10 subways. Bids will shortly be asked for building the subway at Yonge street. A contract has been given to Jennings & Ross, Ltd., Toronto, for the subway at Avenue road, and this work is now under way; contracts have been given to Wells & Gray, Ltd., Toronto, and work will be started shortly on the subways at Davenport road, at Spadina road, at Holland avenue, and at Bathurst street. Bids have been received and are at present under consideration for the subways at Shaw street, at Christie street, at Ossington avenue, and at Dovercourt road. The work of raising the track will be carried out by the Canadian Pacific with company's forces. The new station to be built just east of Yonge street will be used jointly by the Canadian Pacific and the Canadian Northern Ontario, and bids will probably be called for the erection of this building soon. At the present time about one mile of track has been elevated between a point east of Yonge street and west of Avenue road. (May 9, p. 1053.)

Railway Financial News

BALTIMORE & OHIO.—The circuit court of Baltimore has held that the B. & O. did not need to obtain the approval of the Public Service Commission of Maryland before issuing the $63,250,000 4½ per cent. convertible notes which were recently sold.

BOSTON & MAINE.—This company has sold to J. P. Morgan & Co., New York, $12,000,000 one-year 6 per cent. notes of June 2, 1913, and $2,000,000 Connecticut River Railroad one-year 5 per cent. notes. This provides for about $12,000,000 bonds and notes falling due June 10, 1913, and for additional working capital.

CHESAPEAKE & OHIO.—The Hocking Valley, of whose $11,000,000 stock the C. & O. owns $8,825,800, has declared an extra dividend of 4½ per cent. in addition to the regular quarterly dividend of 1¾ per cent. The Hocking Valley paid 3 per cent. total in 1911 and 7½ per cent. total in 1912, and is paying regularly quarterly dividends at the annual rate of 7 per cent. The Chesapeake & Ohio declared the regular quarterly dividend of 1¼ per cent., payable June 28.

CHICAGO, ROCK ISLAND & PACIFIC.—The $7,500,000 *railroad* 5's, held in the treasury of the railway company and maturing September 1, will, it is understood, probably be extended for 10 years.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—This company has sold $2,500,000 5 per cent. debenture bonds, due March 1, 1930, to Rhodes & Company and White, Weld & Company, both of New York.

CINCINNATI, HAMILTON & DAYTON.—This company has asked authority of the Ohio State Public Service Commission to issue $787,000 5 per cent. first mortgage bonds, to be sold at 80 per cent. The money is to be used in repairing damage done by the March floods.

DENVER & SALT LAKE.—This company has filed in Denver a notice of increase of stock from $10,000,000 to $35,000,000.

The city of Denver has voted 3 to 1 in favor of a proposition to build a $5,000,000 five-mile tunnel through the Rocky mountains at a 9,000 ft. level for the Denver & Salt Lake road.

ERIE.—J. P. Morgan & Co., New York, have undertaken to extend to July 1, 1943, the $4,000,000 6 per cent. New York, Lake Erie & Western Docks and Improvement first mortgage bonds maturing July 1, 1913. Of the total $4,000,000 bonds there are outstanding in the hands of the public $3,396,000. The new bonds are to bear interest at the rate of 5 per cent., and are offered in exchange for the maturing bonds at par.

HOCKING VALLEY.—See Chesapeake & Ohio.

INTERNATIONAL & GREAT NORTHERN.—The Texas railroad commission has granted the request of the International & Great Northern for an addition to the valuation of its property for the item "value of right-of-way of $591,143," which item was not included in the former valuation under which bonds have been issued.

MIDLAND VALLEY.—Harris, Forbes & Company, New York, and Drexel & Company, Philadelphia, are offering $4,500,000 new first mortgage 5 per cent. bonds of April 1, 1913-1943 at 92, yielding about 5½ per cent. on the investment. The road runs from Wichita, Kan., to Fort Smith, Ark., 321 miles.

J. H. McDonough, of Dallas, Tex., has been elected a director, succeeding J. B. Dodd, of New York.

NATIONAL RAILWAYS OF MEXICO.—Press despatches from London say that arrangements are being made for a Mexican government loan for $25,000,000, a part of which is to be used to pay for the reconstruction of property destroyed during the Mexican revolutions.

NEW YORK & HARLEM.—Harold Vanderbilt has been elected a director, succeeding J. P. Morgan, deceased.

NEW YORK, NEW HAVEN & HARTFORD.—A quarterly dividend of 1½ per cent. has been declared, payable June 30. This reduces the annual rate from 8 per cent., which has been paid from 1895 to the present time, to an annual rate of 6 per cent.

A stockholders' committee has been formed consisting of George Von L. Meyer, chairman; Charles F. Adams, 2nd; Philip Dexter; Wilmot R. Evans, president of Boston Five-Cent Savings Bank; James L. Richards, president of Massachusetts Gas Co.; Charles A. Stone, of Stone & Webster; and Eugene V. R. Thayer, president of Merchants National Bank, Richard Olney and B. W. Palmer will act as counsel. Two or three additional names will later be added.

Circular to stockholders says:

"It is evident from price of stock there is uneasiness on the part of investors, although gross earnings are increasing and assets, according to the validation commission, considerably exceed all liabilities, including stock. Policy of the company ought to be studied, all facts bearing on future management to be ascertained, and appropriate action taken to remove apprehensions of investors.

"It is the intention of the committee to invite co-operation of directors. We do not now express any judgment as to the management. Probably the decline has been due, at least in part, to rapid expansion of activities and consequent increases of capitalization, and charges.

"To determine whether expansions have been wise requires more accurate acquaintance than we possess and than shareholders possess. The more important question, whether policy of expansion should be continued, deserves immediate consideration. It may be period of rest and consolidation should follow. Equally it may be that partially completed recent acquisitions cannot wisely be so treated.

"It is time investigation concerning future policy be made on behalf of stockholders, looking to determination of these vitally important questions and proper steps to care for various interests affected. Public employees and stockholders are all equally concerned in future policy. Investigation and subsequent action by a committee of those who have had no hand in any of the policies, and may, therefore, be unbiased, would be useful.

"Any such action, to be of value must be the action of the greater part of stockholders. Unless the committee has stockholders behind it, nothing can be accomplished. Therefore, we request you to sign proxy sent herewith, and agreement to furnish additional proxies if committee finds necessary."

SEABOARD AIR LINE.—James B. Colgate & Co., and Townsend Scott & Son, both of Baltimore, Md., have bought $750,000 first mortgage 5 per cent. bonds, of April 1, 1913-1953, of the Tampa & Gulf Coast, guaranteed principal and interest by the Seaboard Air Line. The Tampa & Gulf Coast is being built from a connection with the Tampa Northern through the Pinellas peninsula, 77 miles.

SOUTHERN PACIFIC.—Kuhn, Loeb & Company, New York, have sold $5,000,000 4½ per cent. equipment trust certificates at a price to yield nearly 5 per cent. These certificates mature in annual instalments over ten years. They are part of the $10,120,000 equipment trust certificates recently authorized.

See also Union Pacific.

TAMPA & GULF COAST.—See Seaboard Air Line.

TEMPLE & NORTHWESTERN.—The property of this company has been sold to W. S. McGregor, of Temple, Tex., who had previously held control.

UNION PACIFIC.—There has been substituted under the Oregon Short Line refunding mortgage bonds, $6,170,000 Baltimore & Ohio common, $4,000,000 New York Central & Hudson River stock, $3,306,000 San Pedro, Los Angeles & Salt Lake 4 per cent. bonds and $55,000,000 Oregon Short Line refunding 4's (the total issue of these bonds is $100,000,000, of which $45,000,000 are outstanding and this $55,000,000 now deposited under the mortgage has been in the treasury of the Union Pacific) for the $108,000,000 Southern Pacific stock which heretofore formed part of the collateral for these bonds. This leaves the entire $126,000,000 Southern Pacific stock, which the Union Pacific owns, free in the Union Pacific treasury.

WHEELING & LAKE ERIE.—On May 7 five directors were elected as follows: E. S. Cook, W. A. Turner, Myron T. Herrick, of Cleveland, Ohio, and W. R. Nicholson, of Philadelphia, Pa., by the majority interests, and Ralph E. Cohen, of Steubenville, by the minority interests.